FIG. 1

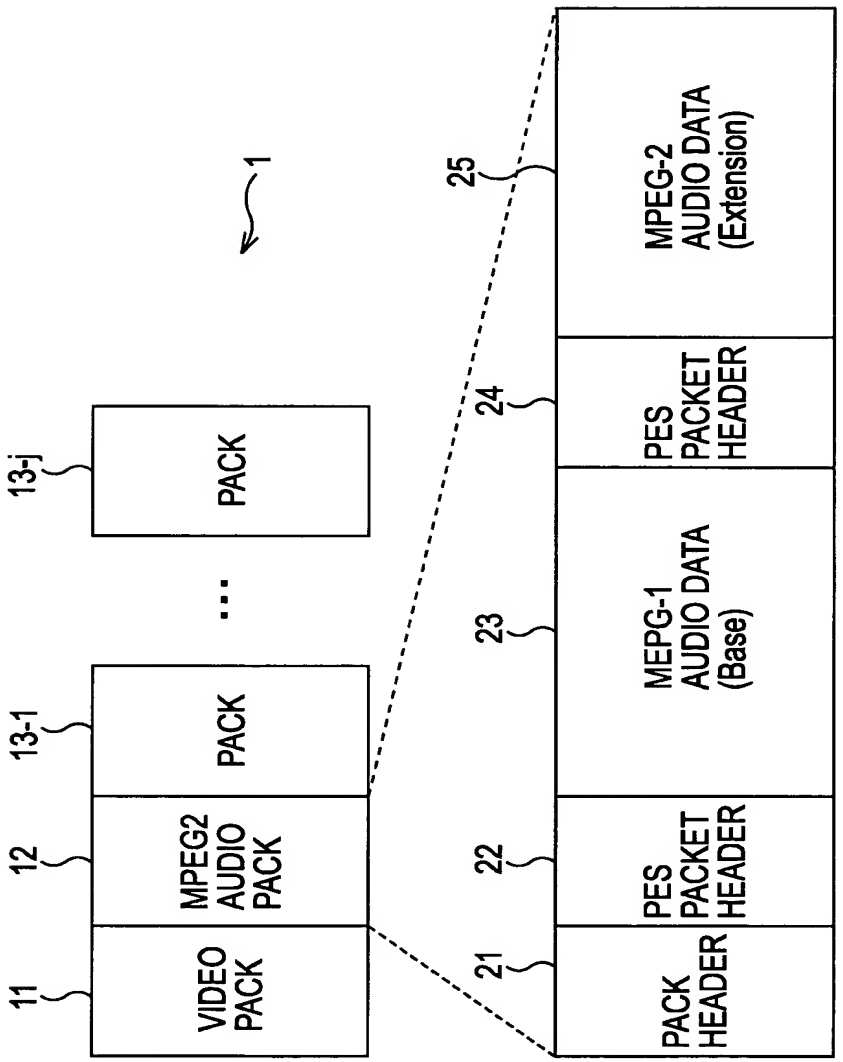
1
11
VIDEO PACK
12
MPEG2 AUDIO PACK
13-1
PACK
13-j
PACK
21
PACK HEADER
22
PES PACKET HEADER
23
MEPG-1 AUDIO DATA (Base)
24
PES PACKET HEADER
25
MPEG-2 AUDIO DATA (Extension)

FIG. 2

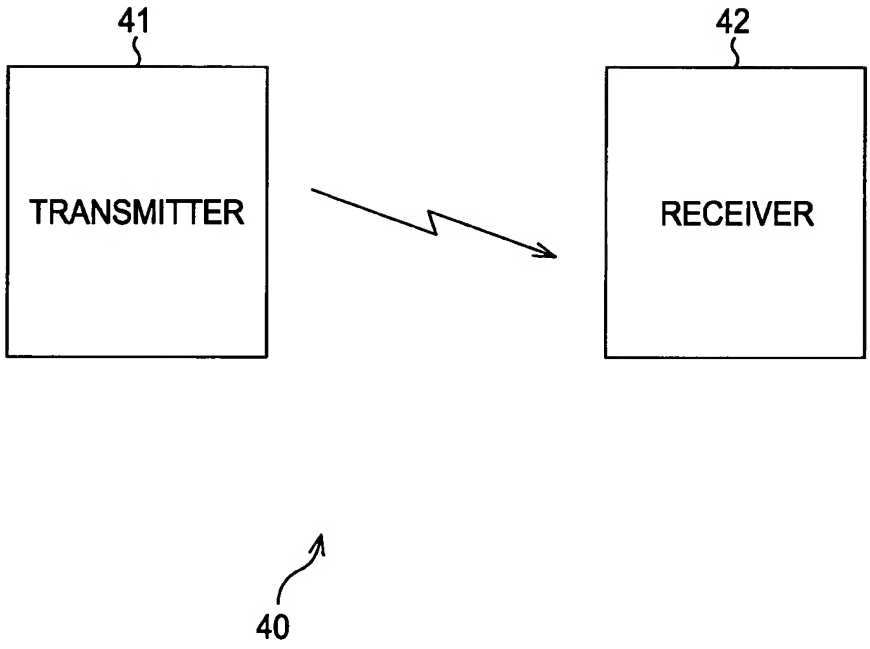

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FIG. 3

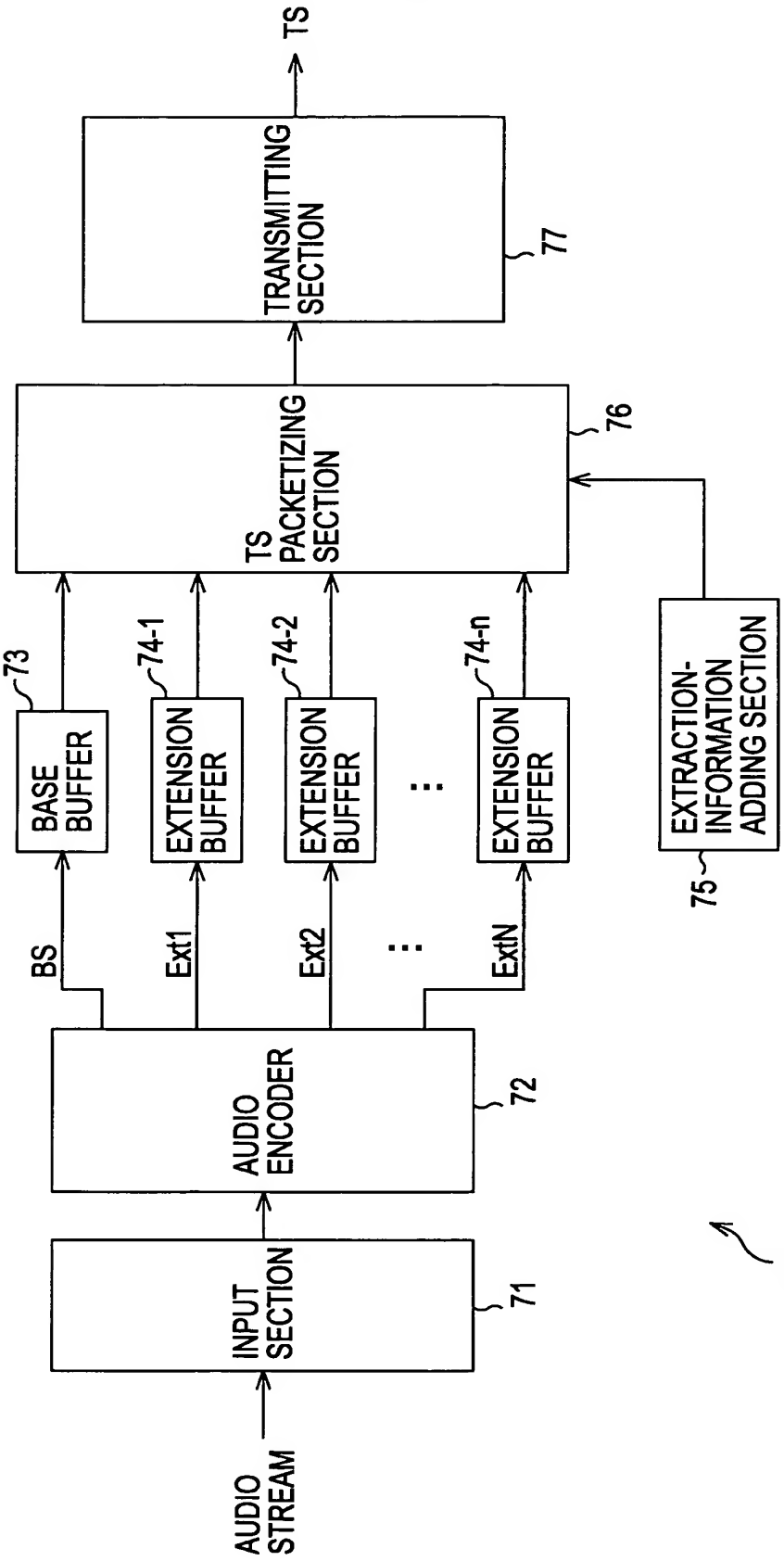

FIG. 4

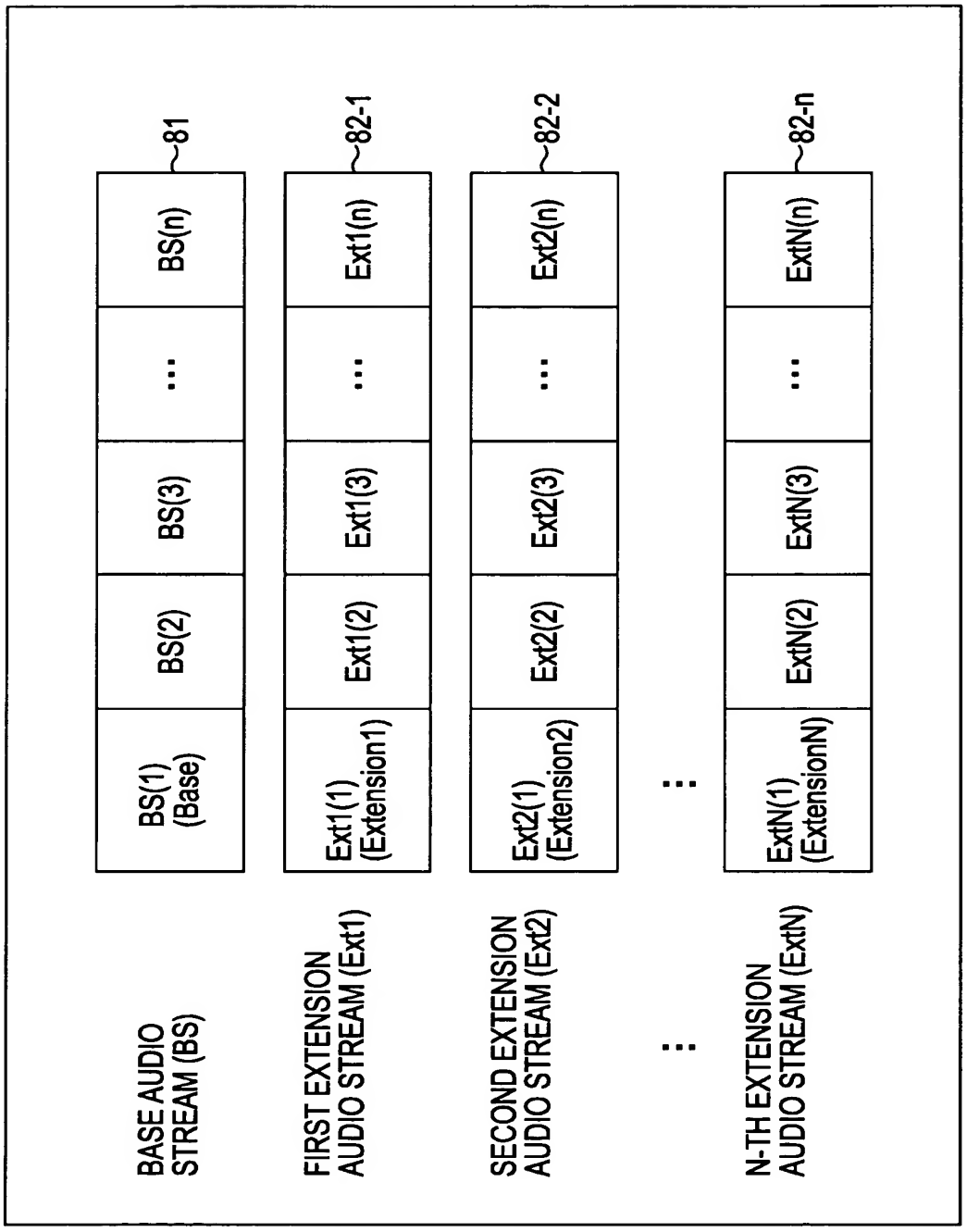
BASE AUDIO STREAM (BS)
FIRST EXTENSION AUDIO STREAM (Ext1)
SECOND EXTENSION AUDIO STREAM (Ext2)
N-TH EXTENSION AUDIO STREAM (ExtN)
81
82-1
82-2
82-n
BS(1) (Base)
BS(2)
BS(3)
BS(n)
Ext1(1) (Extension1)
Ext1(2)
Ext1(3)
Ext1(n)
Ext2(1) (Extension2)
Ext2(2)
Ext2(3)
Ext2(n)
ExtN(1) (ExtensionN)
ExtN(2)
ExtN(3)
ExtN(n)

FIG. 5

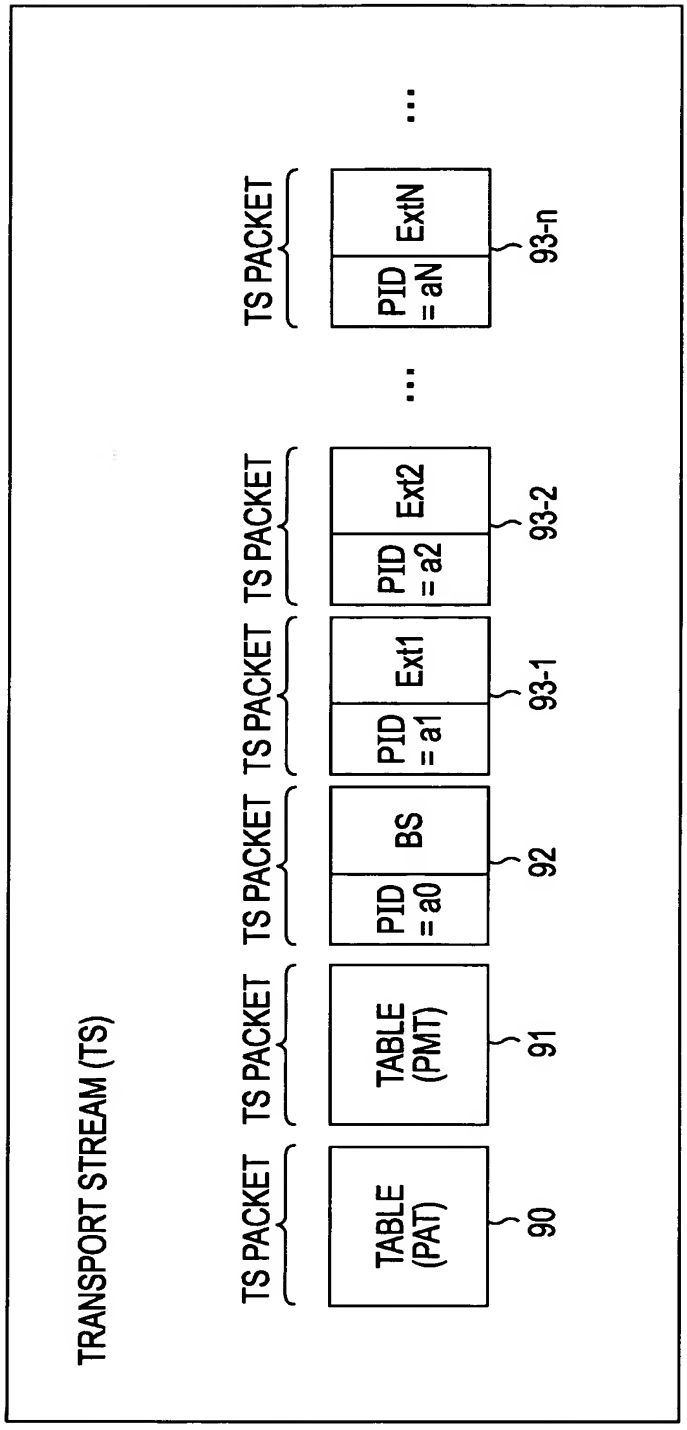
TRANSPORT STREAM (TS)
TS PACKET
TABLE (PAT)
90
TS PACKET
TABLE (PMT)
91
TS PACKET
PID = a0
BS
92
TS PACKET
PID = a1
Ext1
93-1
TS PACKET
PID = a2
Ext2
93-2
...
TS PACKET
PID = aN
ExtN
93-n
...

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FIG. 6

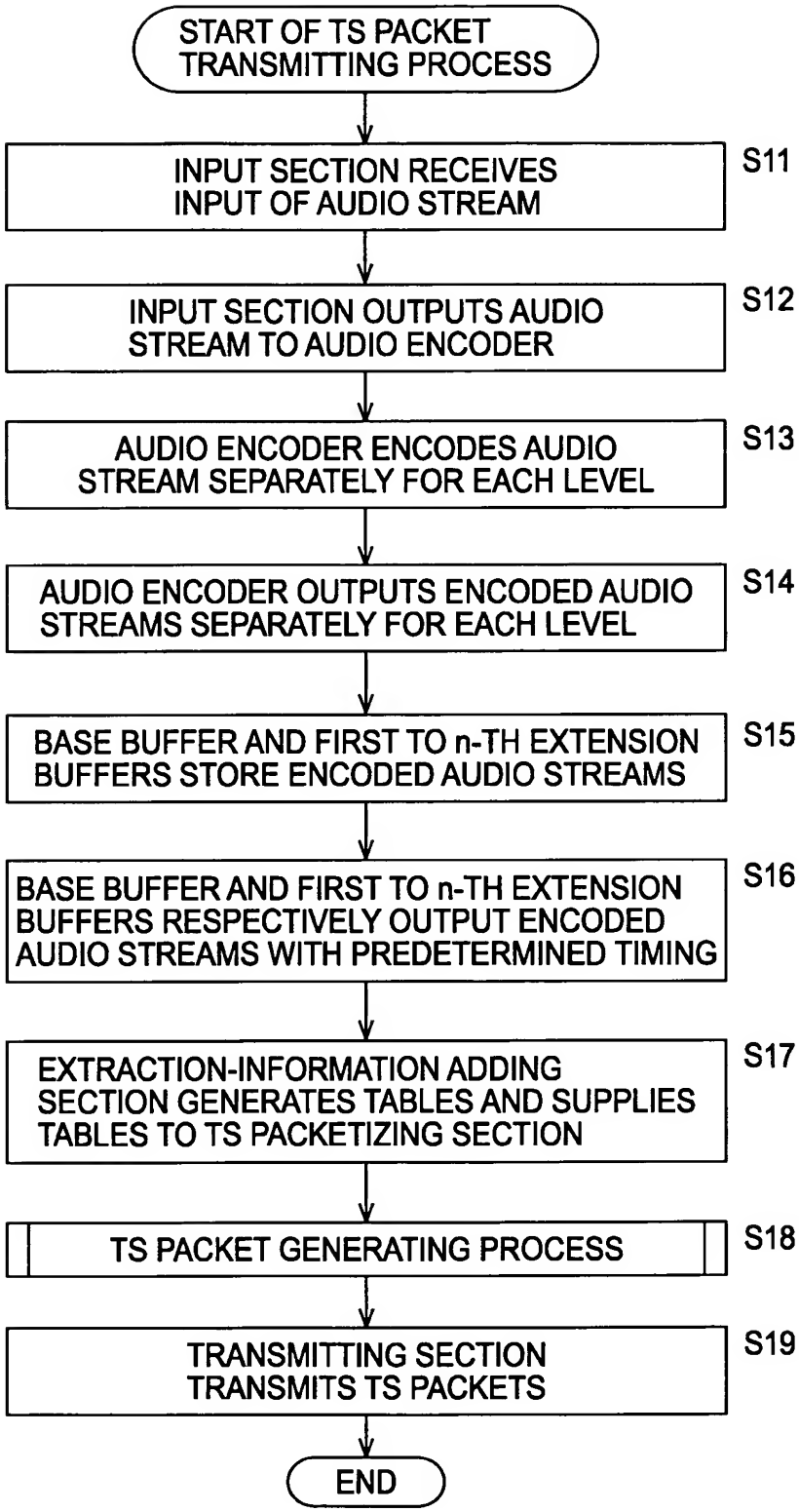


FIG. 7

```
Program Association Table(PAT){
   program_entry{
        program_number PMT_PID{
                1          X
      }         2          Y
}
```

FIG. 8

```
Program Map Table(PMT){
   PID    X
   stream_entry(){
      BASE_PID a0
      Ext1_PID a1
      Ext2_PID a2
          ⋮
      ExtN_PID aN
   }
}
```

FIG. 9

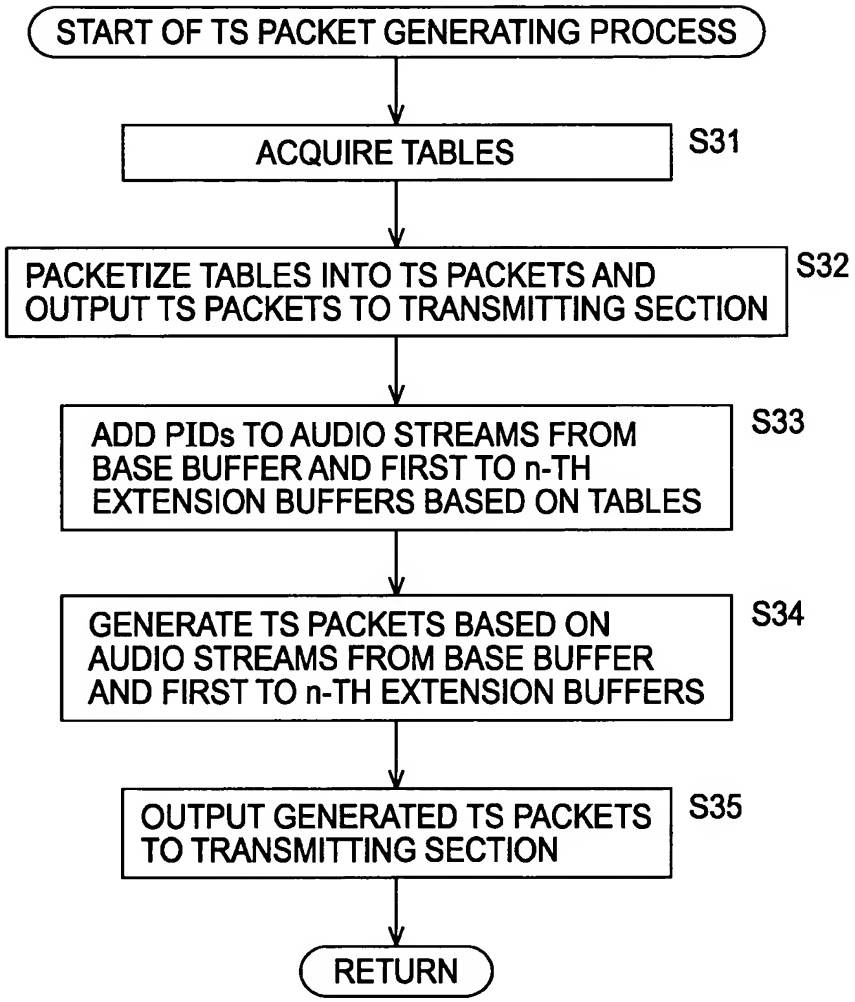

START OF TS PACKET GENERATING PROCESS
ACQUIRE TABLES
S31
PACKETIZE TABLES INTO TS PACKETS AND OUTPUT TS PACKETS TO TRANSMITTING SECTION
S32
ADD PIDs TO AUDIO STREAMS FROM BASE BUFFER AND FIRST TO n-TH EXTENSION BUFFERS BASED ON TABLES
S33
GENERATE TS PACKETS BASED ON AUDIO STREAMS FROM BASE BUFFER AND FIRST TO n-TH EXTENSION BUFFERS
S34
OUTPUT GENERATED TS PACKETS TO TRANSMITTING SECTION
S35
RETURN

FIG. 10

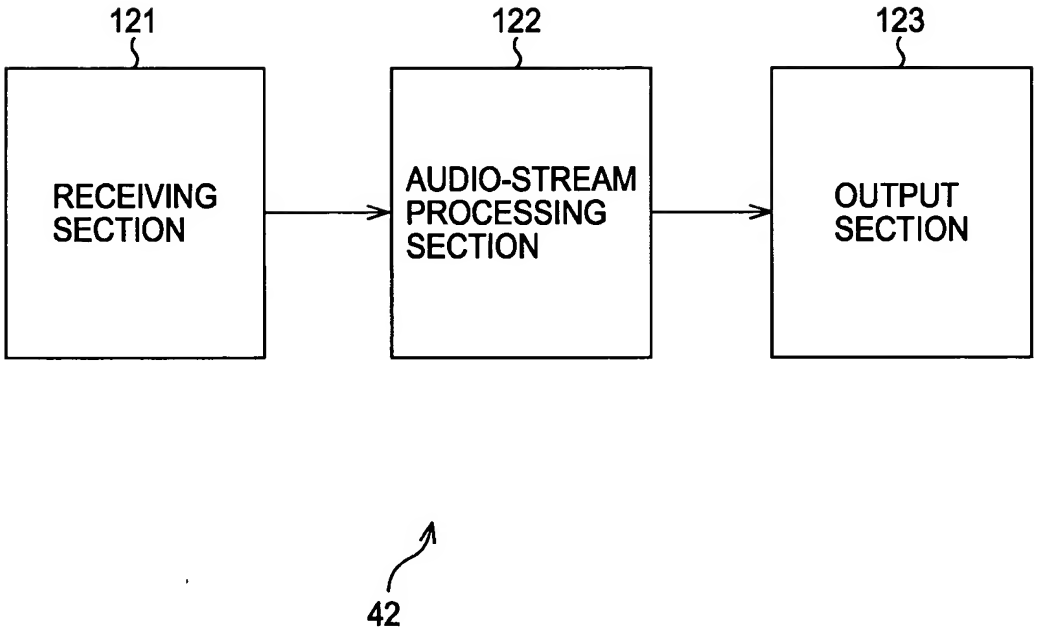

121
122
123
RECEIVING SECTION
AUDIO-STREAM PROCESSING SECTION
OUTPUT SECTION
42

FIG. 11

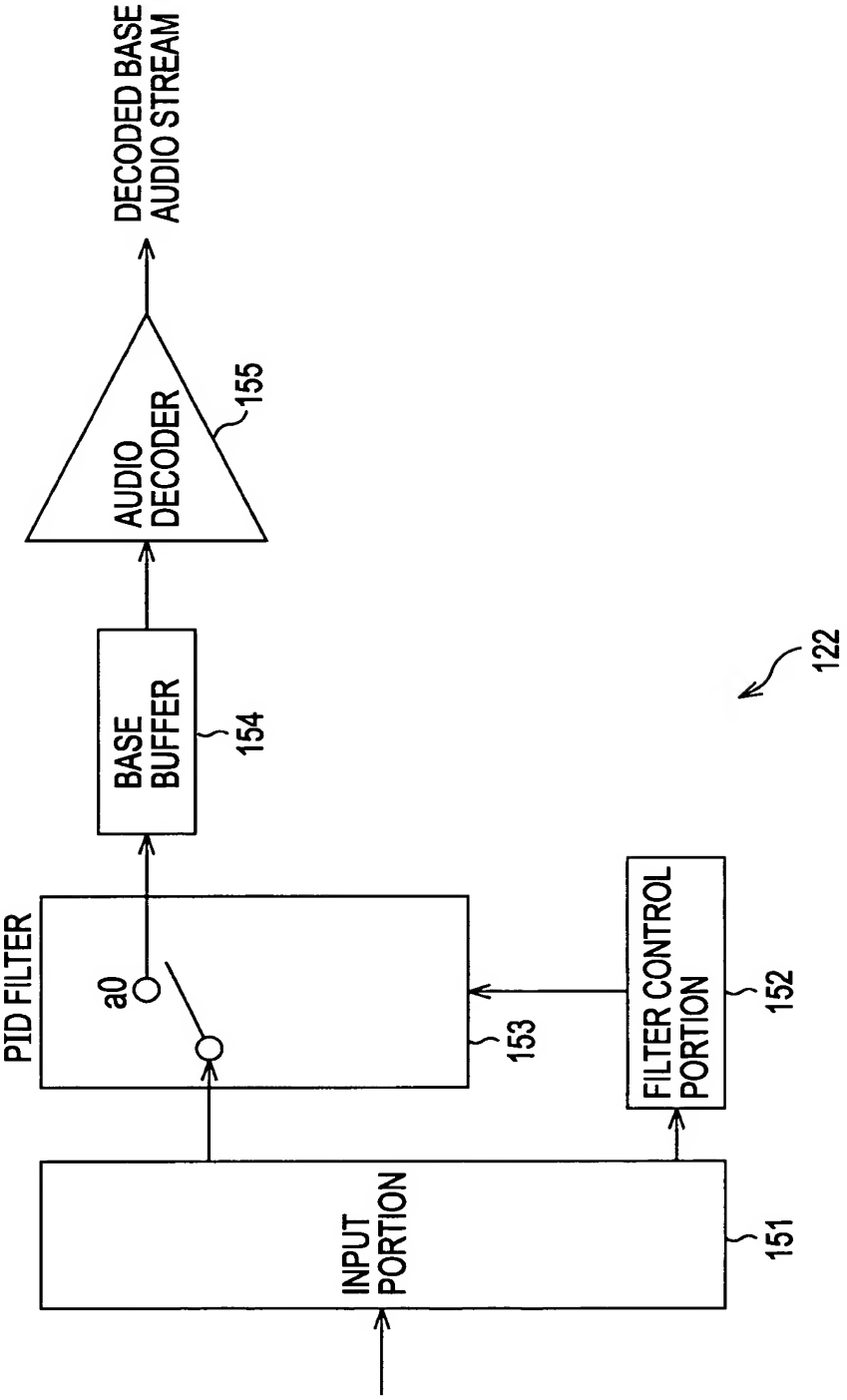

DECODED BASE AUDIO STREAM
AUDIO DECODER
155
BASE BUFFER
154
122
PID FILTER
a0
153
FILTER CONTROL PORTION
152
INPUT PORTION
151

FIG. 12

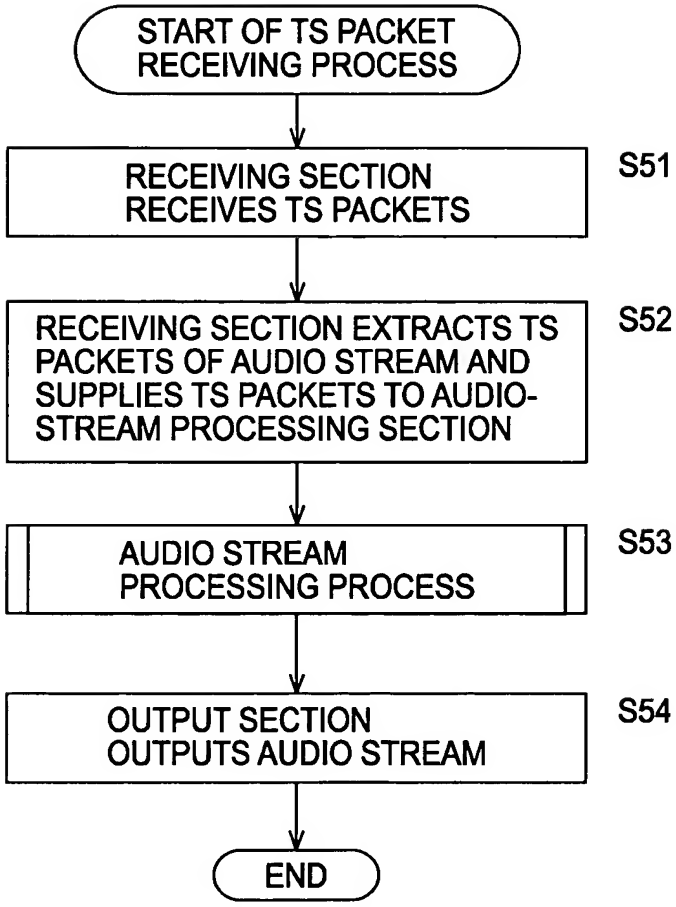

START OF TS PACKET RECEIVING PROCESS
RECEIVING SECTION RECEIVES TS PACKETS
S51
RECEIVING SECTION EXTRACTS TS PACKETS OF AUDIO STREAM AND SUPPLIES TS PACKETS TO AUDIO-STREAM PROCESSING SECTION
S52
AUDIO STREAM PROCESSING PROCESS
S53
OUTPUT SECTION OUTPUTS AUDIO STREAM
S54
END

FIG. 13

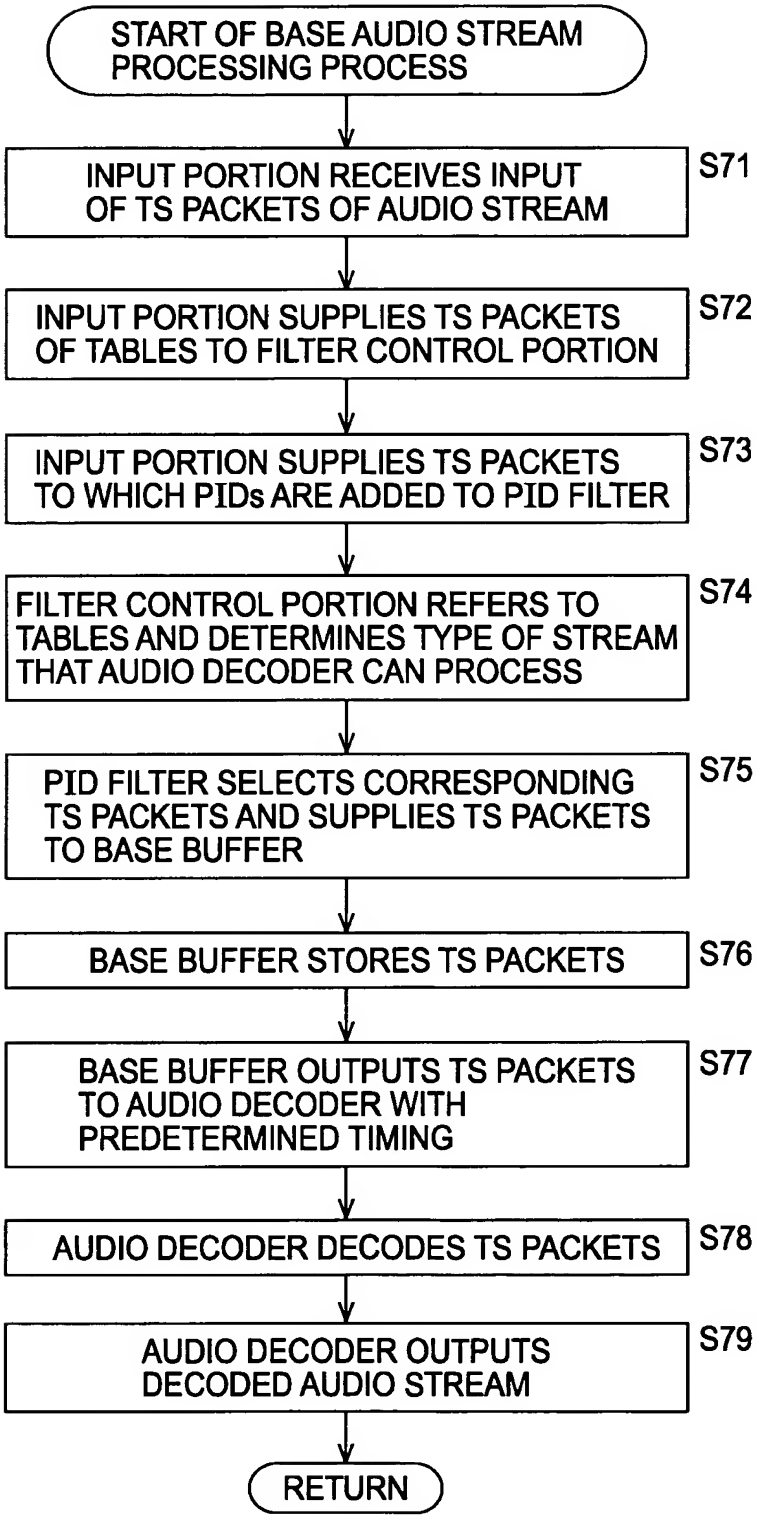

START OF BASE AUDIO STREAM PROCESSING PROCESS
INPUT PORTION RECEIVES INPUT OF TS PACKETS OF AUDIO STREAM
S71
INPUT PORTION SUPPLIES TS PACKETS OF TABLES TO FILTER CONTROL PORTION
S72
INPUT PORTION SUPPLIES TS PACKETS TO WHICH PIDs ARE ADDED TO PID FILTER
S73
FILTER CONTROL PORTION REFERS TO TABLES AND DETERMINES TYPE OF STREAM THAT AUDIO DECODER CAN PROCESS
S74
PID FILTER SELECTS CORRESPONDING TS PACKETS AND SUPPLIES TS PACKETS TO BASE BUFFER
S75
BASE BUFFER STORES TS PACKETS
S76
BASE BUFFER OUTPUTS TS PACKETS TO AUDIO DECODER WITH PREDETERMINED TIMING
S77
AUDIO DECODER DECODES TS PACKETS
S78
AUDIO DECODER OUTPUTS DECODED AUDIO STREAM
S79
RETURN

FIG. 14

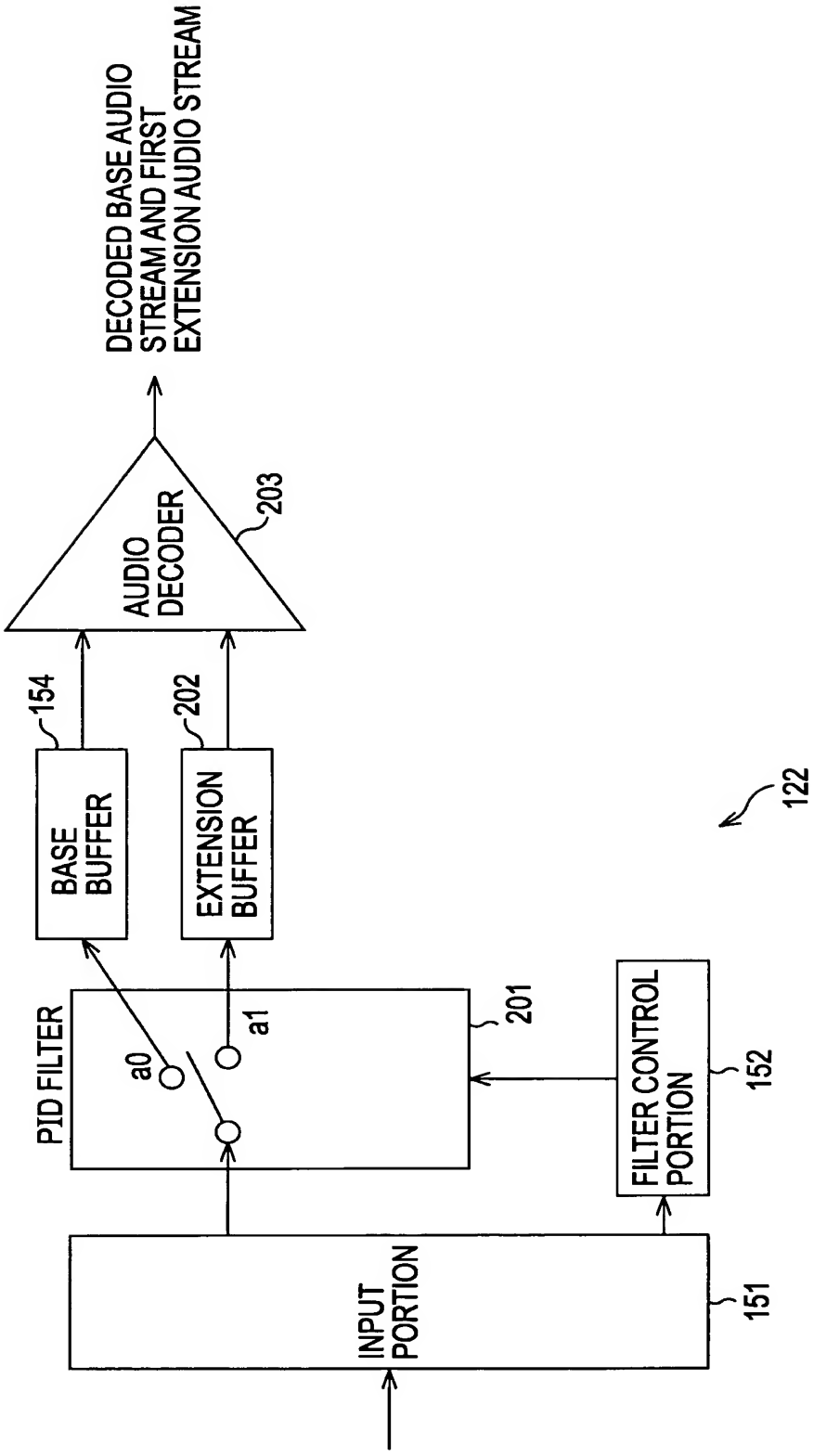

DECODED BASE AUDIO STREAM AND FIRST EXTENSION AUDIO STREAM
AUDIO DECODER
203
154
202
BASE BUFFER
EXTENSION BUFFER
122
PID FILTER
a0
a1
201
FILTER CONTROL PORTION
152
INPUT PORTION
151

FIG. 15

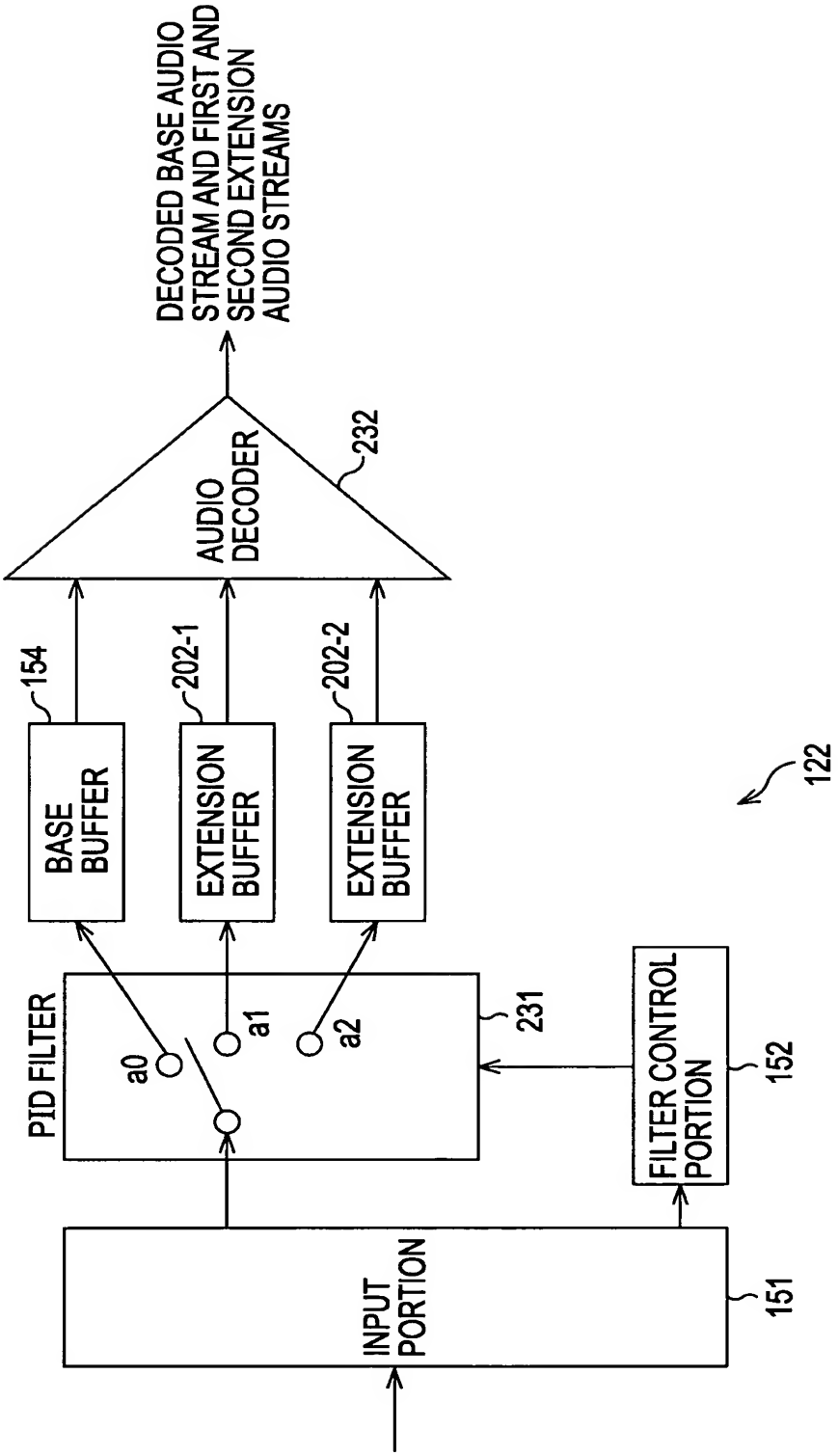

DECODED BASE AUDIO STREAM AND FIRST AND SECOND EXTENSION AUDIO STREAMS
AUDIO DECODER
232
154
202-1
202-2
BASE BUFFER
EXTENSION BUFFER
EXTENSION BUFFER
122
PID FILTER
a0
a1
a2
231
FILTER CONTROL PORTION
152
INPUT PORTION
151

FIG. 16

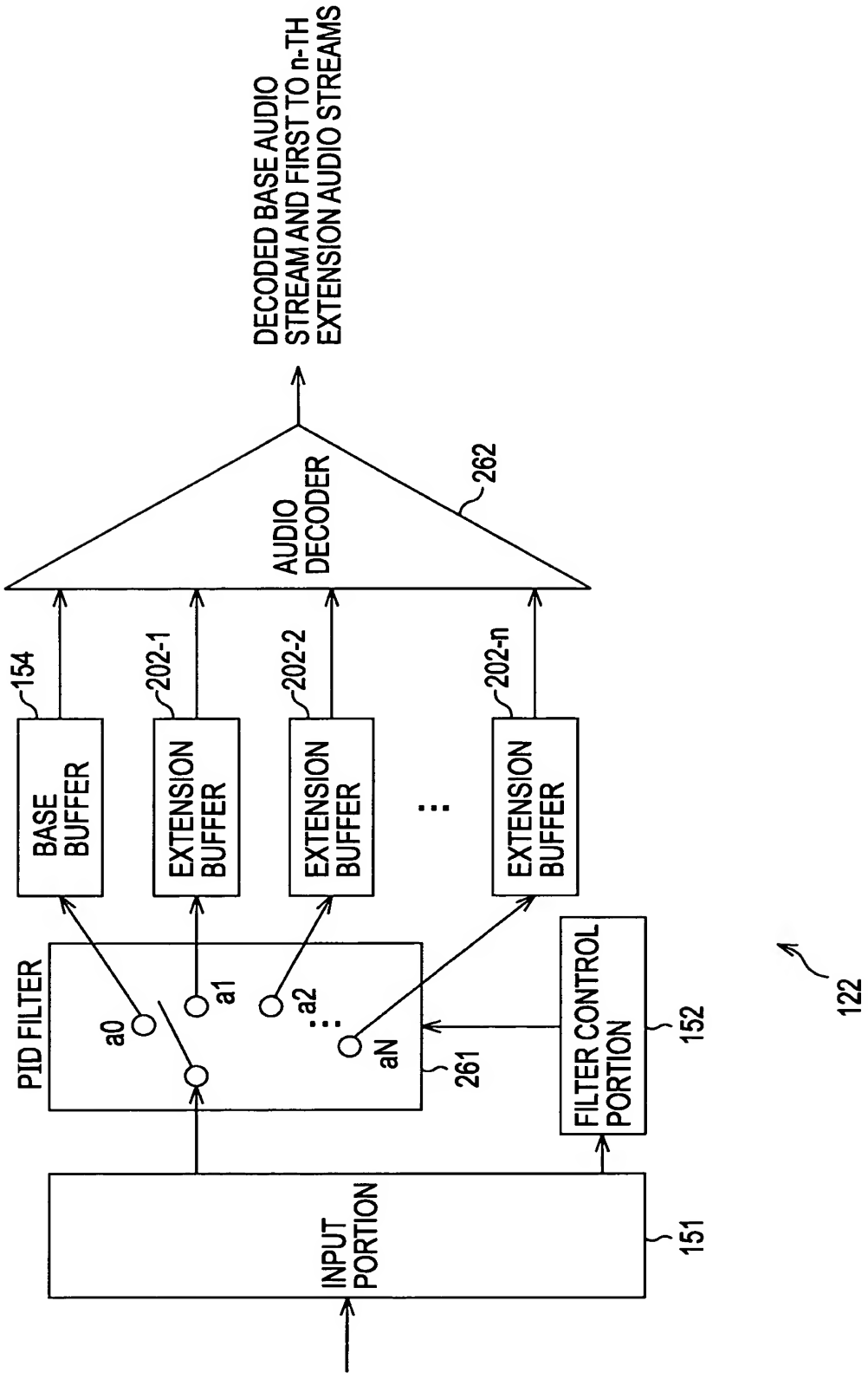

DECODED BASE AUDIO STREAM AND FIRST TO n-TH EXTENSION AUDIO STREAMS
AUDIO DECODER
262
154
202-1
202-2
202-n
BASE BUFFER
EXTENSION BUFFER
EXTENSION BUFFER
EXTENSION BUFFER
PID FILTER
a0
a1
a2
aN
261
FILTER CONTROL PORTION
152
INPUT PORTION
151
122

FIG. 17

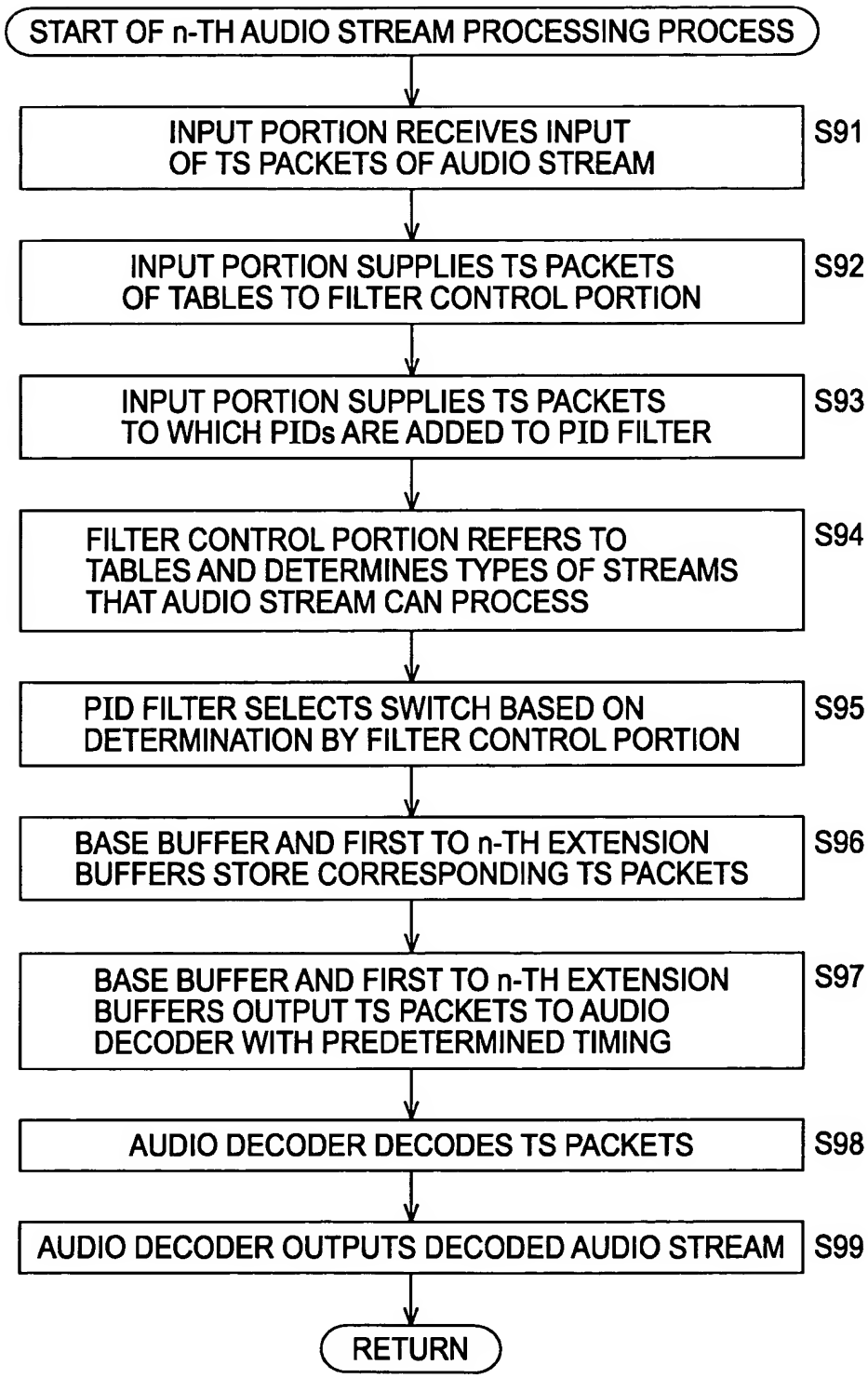

START OF n-TH AUDIO STREAM PROCESSING PROCESS
INPUT PORTION RECEIVES INPUT OF TS PACKETS OF AUDIO STREAM
S91
INPUT PORTION SUPPLIES TS PACKETS OF TABLES TO FILTER CONTROL PORTION
S92
INPUT PORTION SUPPLIES TS PACKETS TO WHICH PIDs ARE ADDED TO PID FILTER
S93
FILTER CONTROL PORTION REFERS TO TABLES AND DETERMINES TYPES OF STREAMS THAT AUDIO STREAM CAN PROCESS
S94
PID FILTER SELECTS SWITCH BASED ON DETERMINATION BY FILTER CONTROL PORTION
S95
BASE BUFFER AND FIRST TO n-TH EXTENSION BUFFERS STORE CORRESPONDING TS PACKETS
S96
BASE BUFFER AND FIRST TO n-TH EXTENSION BUFFERS OUTPUT TS PACKETS TO AUDIO DECODER WITH PREDETERMINED TIMING
S97
AUDIO DECODER DECODES TS PACKETS
S98
AUDIO DECODER OUTPUTS DECODED AUDIO STREAM
S99
RETURN

FIG. 18

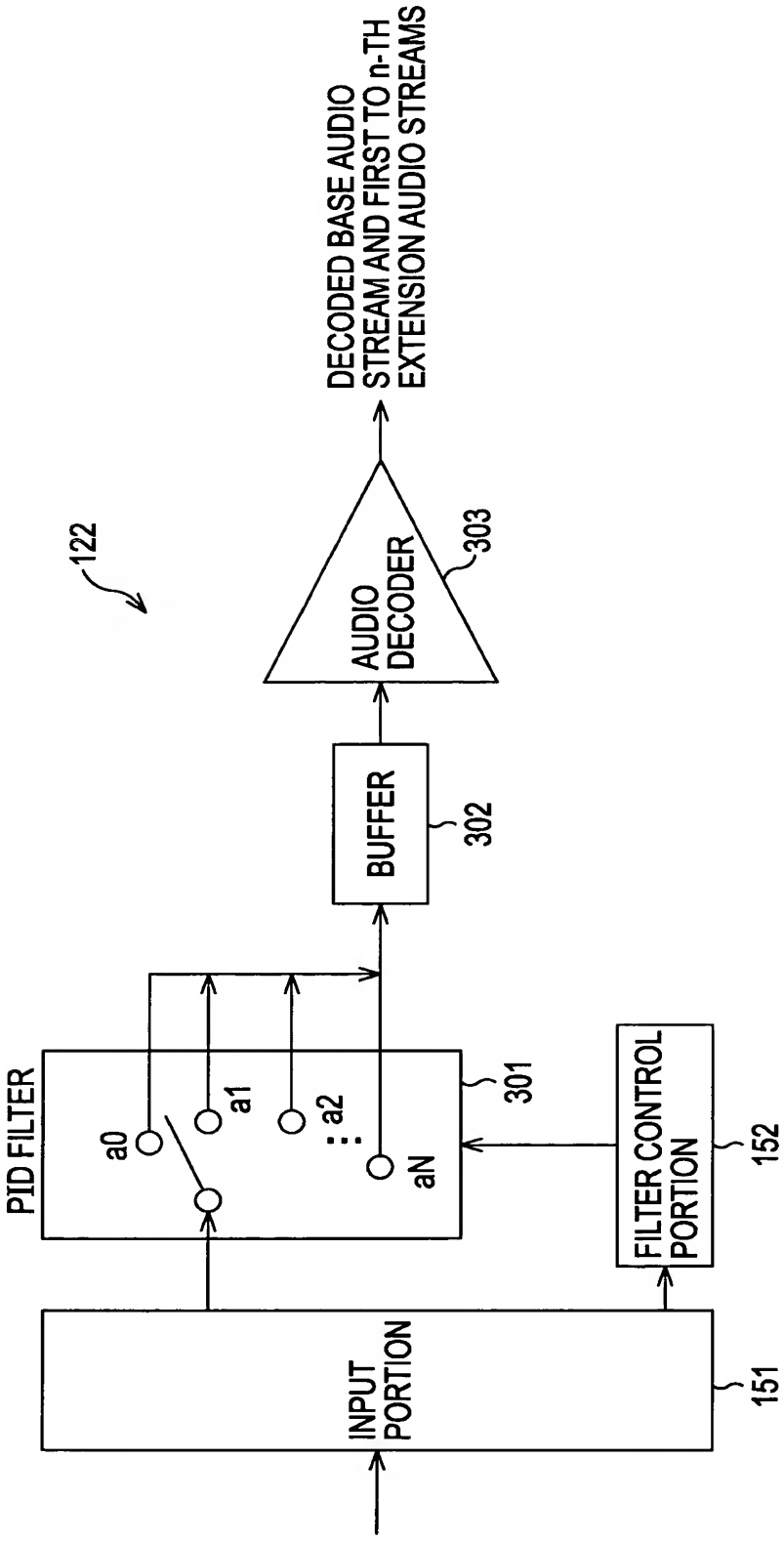

DECODED BASE AUDIO STREAM AND FIRST TO n-TH EXTENSION AUDIO STREAMS
122
AUDIO DECODER
303
BUFFER
302
PID FILTER
a0
a1
a2
aN
301
FILTER CONTROL PORTION
152
INPUT PORTION
151

FIG. 19

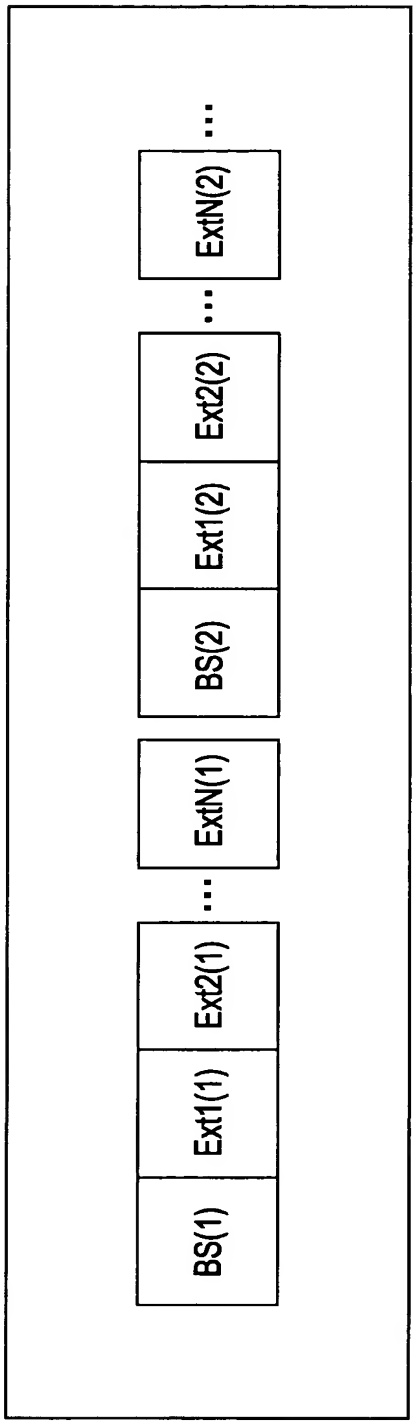


FIG. 20

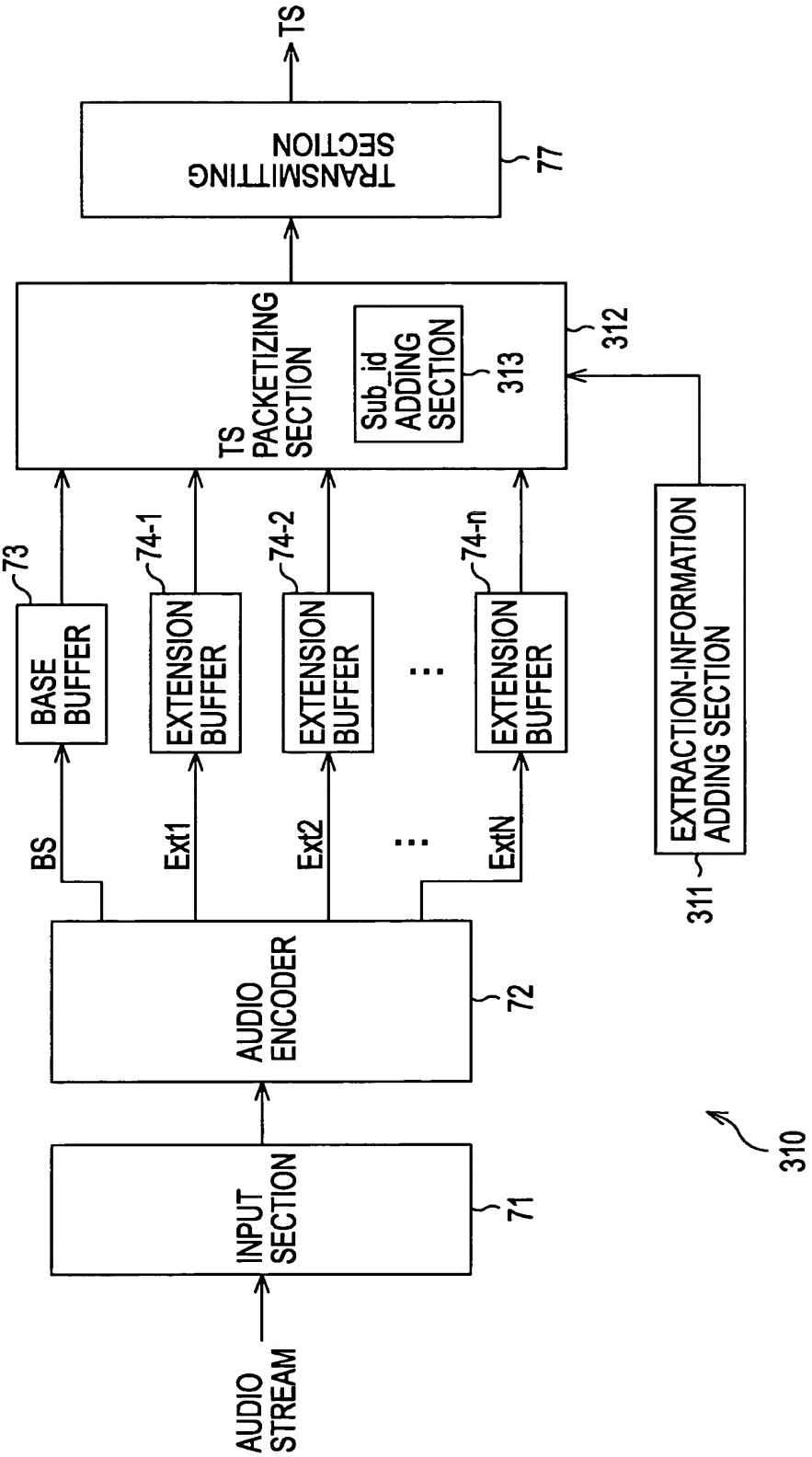

AUDIO STREAM
INPUT SECTION
71
AUDIO ENCODER
72
BS
Ext1
Ext2
ExtN
73
BASE BUFFER
74-1
EXTENSION BUFFER
74-2
EXTENSION BUFFER
74-n
EXTENSION BUFFER
TS PACKETIZING SECTION
Sub_id ADDING SECTION
313
312
EXTRACTION-INFORMATION ADDING SECTION
311
TRANSMITTING SECTION
77
TS
310

FIG. 21

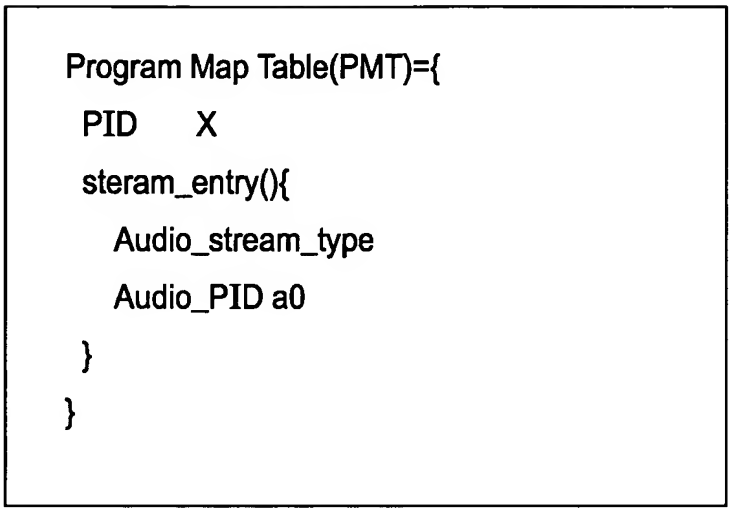

Program Map Table(PMT)={
PID X
steram_entry(){
Audio_stream_type
Audio_PID a0
}
}

FIG. 22

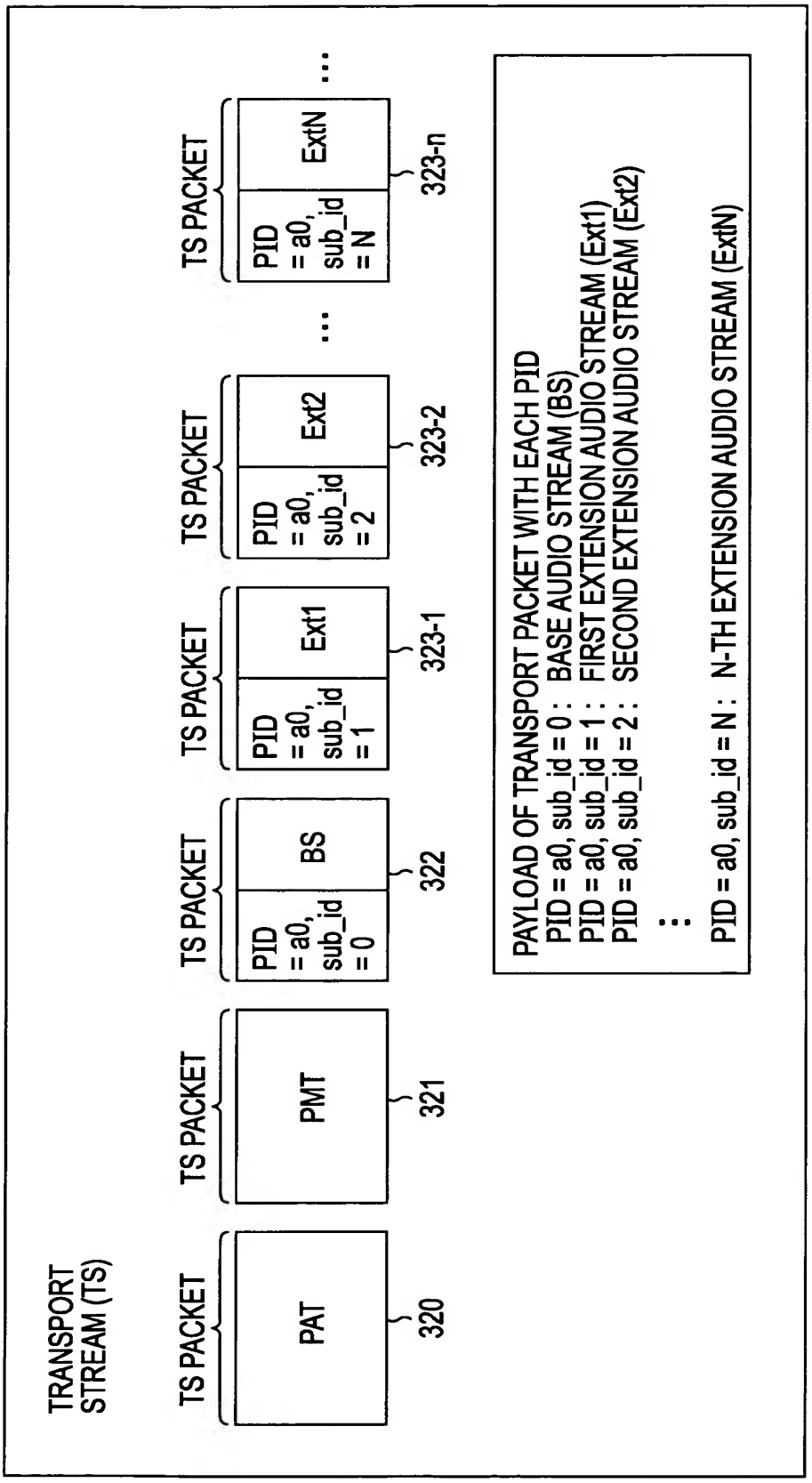

TRANSPORT STREAM (TS)
TS PACKET
PAT
320
TS PACKET
PMT
321
TS PACKET
PID = a0, sub_id = 0
BS
322
TS PACKET
PID = a0, sub_id = 1
Ext1
323-1
TS PACKET
PID = a0, sub_id = 2
Ext2
323-2
...
TS PACKET
PID = a0, sub_id = N
ExtN
323-n
...
PAYLOAD OF TRANSPORT PACKET WITH EACH PID
PID = a0, sub_id = 0 : BASE AUDIO STREAM (BS)
PID = a0, sub_id = 1 : FIRST EXTENSION AUDIO STREAM (Ext1)
PID = a0, sub_id = 2 : SECOND EXTENSION AUDIO STREAM (Ext2)
:
PID = a0, sub_id = N : N-TH EXTENSION AUDIO STREAM (ExtN)

FIG. 23

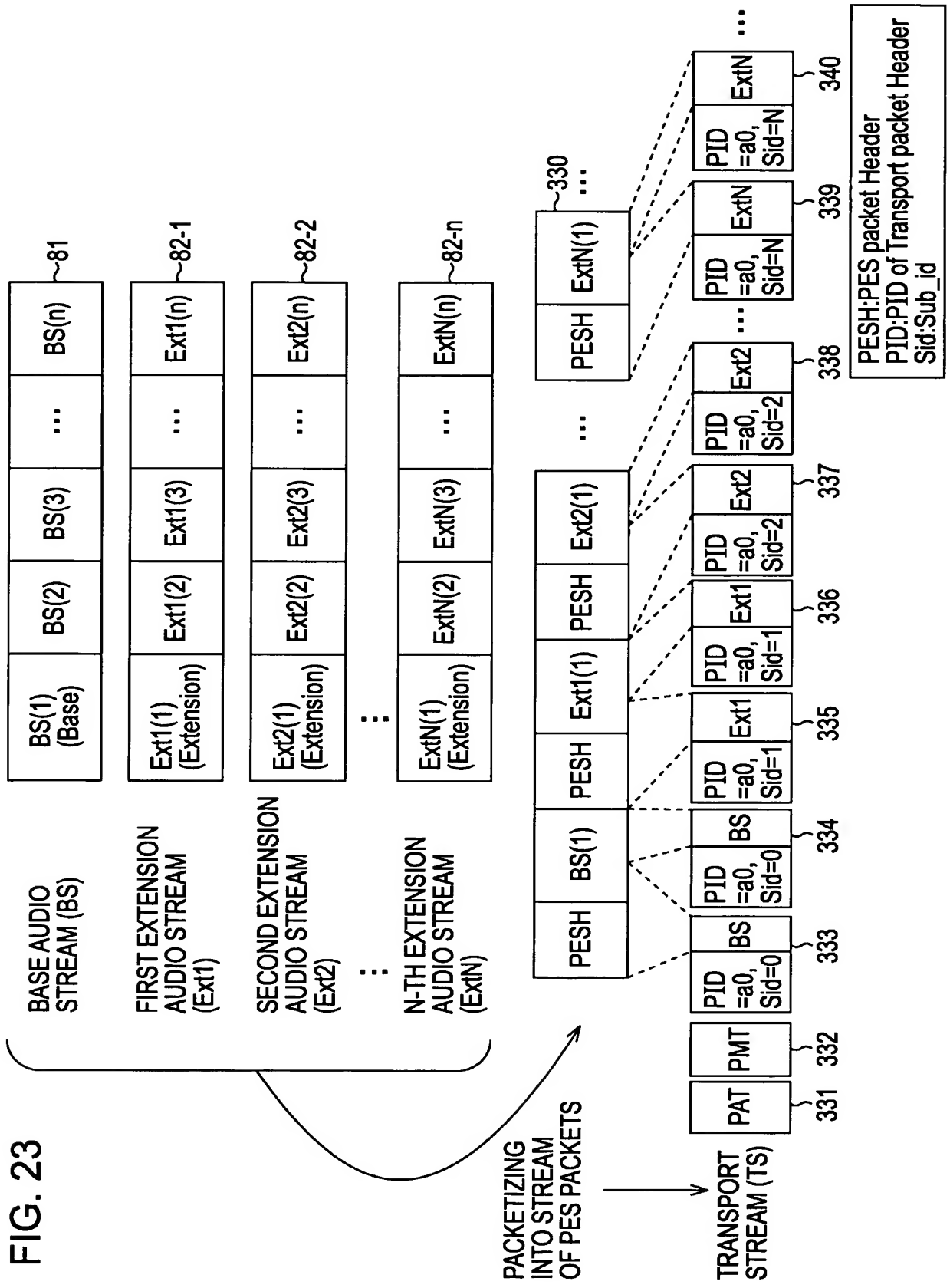

BASE AUDIO STREAM (BS)
FIRST EXTENSION AUDIO STREAM (Ext1)
SECOND EXTENSION AUDIO STREAM (Ext2)
N-TH EXTENSION AUDIO STREAM (ExtN)
BS(1) (Base)
BS(2)
BS(3)
BS(n)
81
Ext1(1) (Extension)
Ext1(2)
Ext1(3)
Ext1(n)
82-1
Ext2(1) (Extension)
Ext2(2)
Ext2(3)
Ext2(n)
82-2
ExtN(1) (Extension)
ExtN(2)
ExtN(3)
ExtN(n)
82-n
PACKETIZING INTO STREAM OF PES PACKETS
TRANSPORT STREAM (TS)
PAT
PMT
PID =a0, Sid=0
BS
PESH
BS(1)
Ext1(1)
Ext2(1)
ExtN(1)
PID =a0, Sid=1
Ext1
PID =a0, Sid=2
Ext2
PID =a0, Sid=N
ExtN
331
332
333
334
335
336
337
338
339
340
330
PESH:PES packet Header
PID:PID of Transport packet Header
Sid:Sub_id

FIG. 24

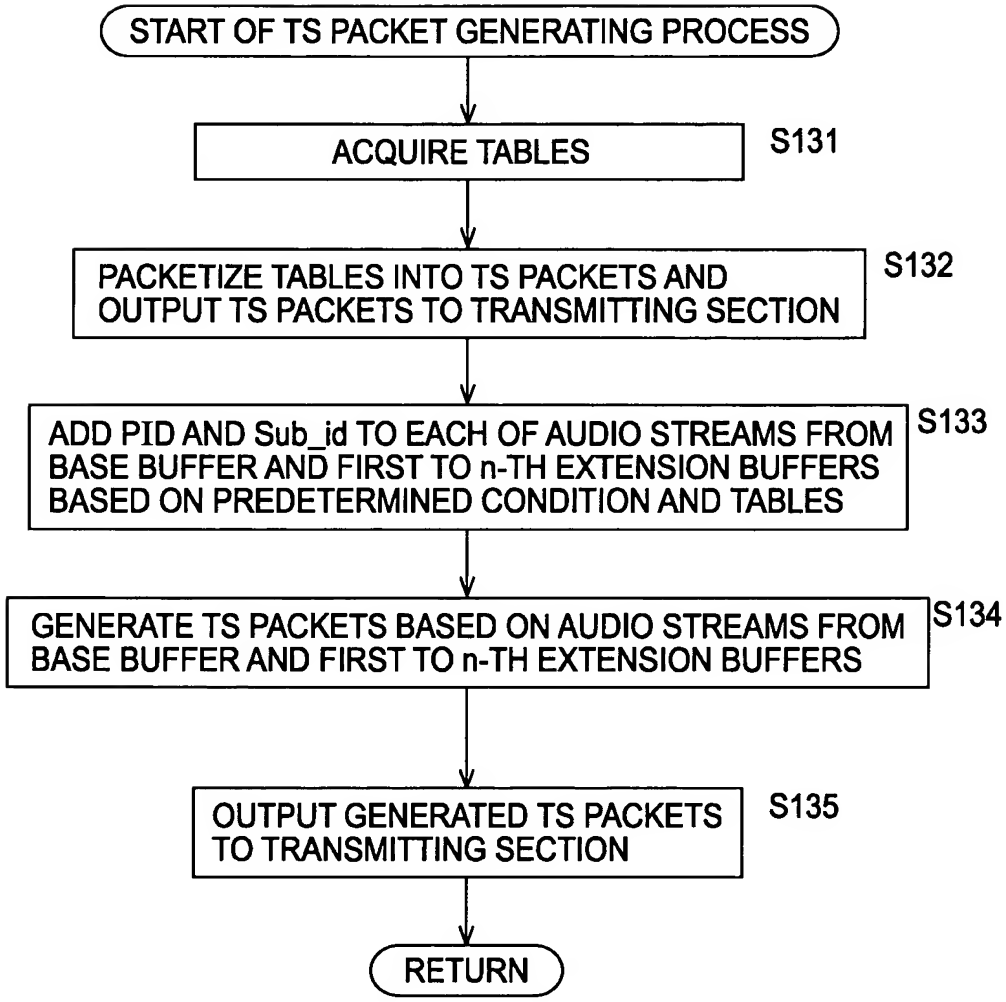

START OF TS PACKET GENERATING PROCESS
ACQUIRE TABLES
S131
PACKETIZE TABLES INTO TS PACKETS AND OUTPUT TS PACKETS TO TRANSMITTING SECTION
S132
ADD PID AND Sub_id TO EACH OF AUDIO STREAMS FROM BASE BUFFER AND FIRST TO n-TH EXTENSION BUFFERS BASED ON PREDETERMINED CONDITION AND TABLES
S133
GENERATE TS PACKETS BASED ON AUDIO STREAMS FROM BASE BUFFER AND FIRST TO n-TH EXTENSION BUFFERS
S134
OUTPUT GENERATED TS PACKETS TO TRANSMITTING SECTION
S135
RETURN

FIG. 25

```
transport_packet(){
    sync_byte
    transport_error_indicator
    payload_unit_start_indicator
    transport_priority
    PID
    transport_scrambling_control
    adaptation_field_control
    continuity_counter
    adaptation_field(){
        adaptation_field_length
        flags
        transport_private_data_flag(=1)
        flags
        transport_private_data_length(=1)
        sub_id
    }
    payload()
}
```

FIG. 26

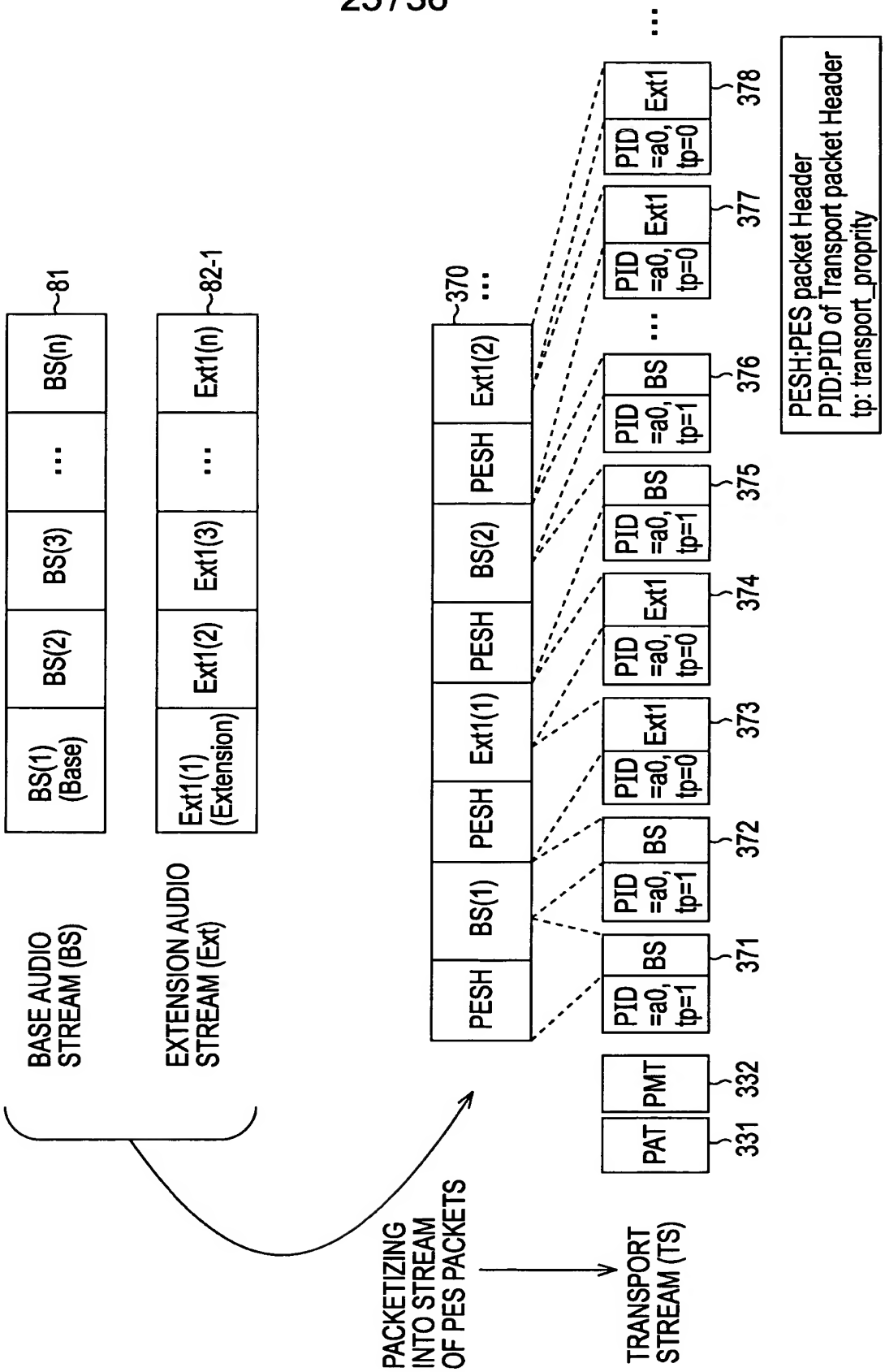
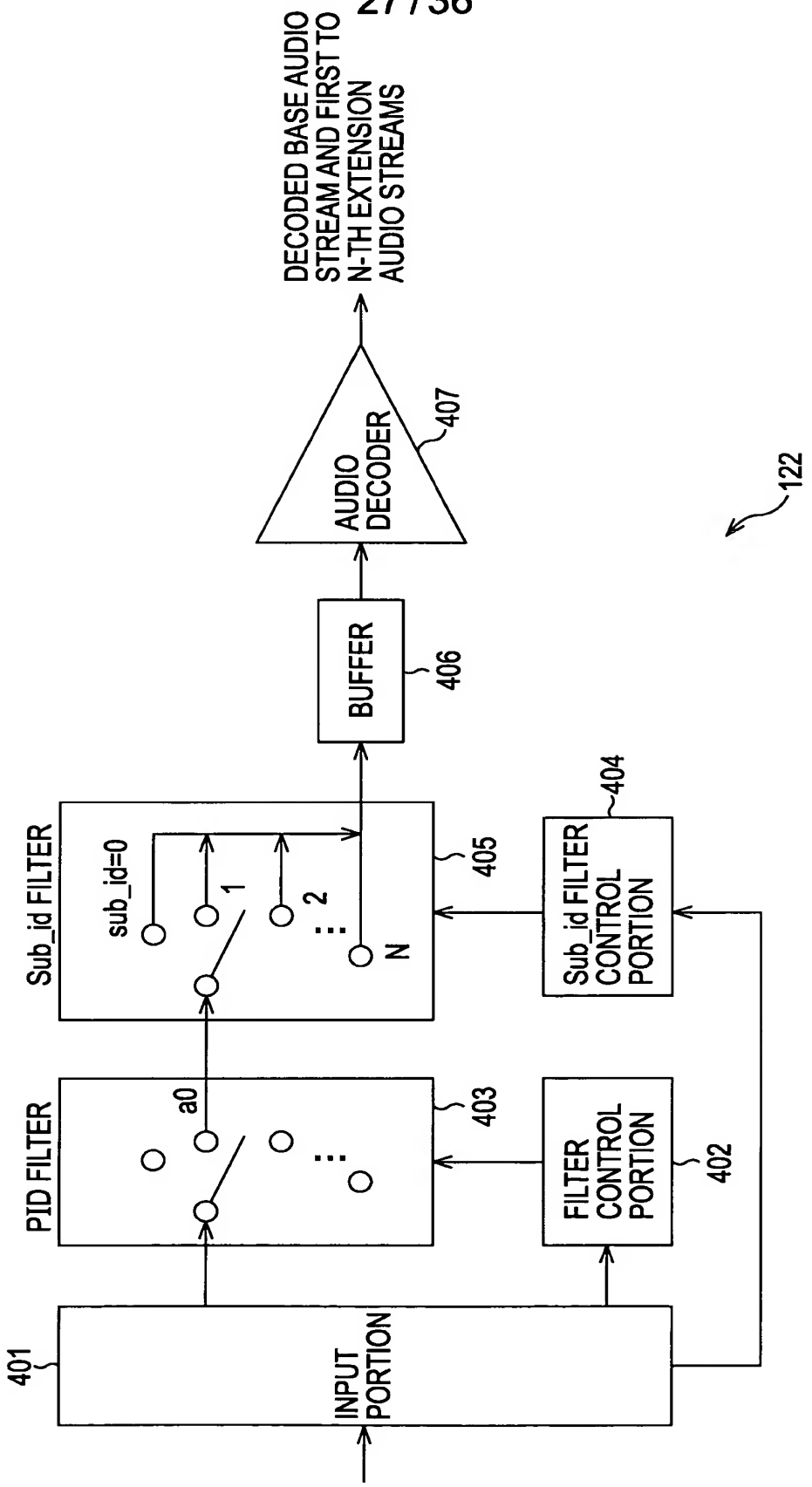

BASE AUDIO STREAM (BS)
EXTENSION AUDIO STREAM (Ext)
BS(1) (Base)
BS(2)
BS(3)
...
BS(n)
81
Ext1(1) (Extension)
Ext1(2)
Ext1(3)
...
Ext1(n)
82-1
PACKETIZING INTO STREAM OF PES PACKETS
TRANSPORT STREAM (TS)
PAT
PMT
331
332
PESH
BS(1)
Ext1(1)
BS(2)
Ext1(2)
370
PID =a0, tp=1 BS
371
372
PID =a0, tp=0 Ext1
373
374
375
376
377
378
PESH:PES packet Header
PID:PID of Transport packet Header
tp: transport_proprity

FIG. 27

```
transport_packet(){
    sync_byte
    transport_error_indicator
    payload_unit_start_indicator
    transport_priority // 0 : Ext1 , 1 : Base
    PID
    transport_scrambling_control
    adaptation_field_control
    continuity_counter
    payload()
}
```

FIG. 28


DECODED BASE AUDIO STREAM AND FIRST TO N-TH EXTENSION AUDIO STREAMS
AUDIO DECODER
407
122
BUFFER
406
Sub_id FILTER
sub_id=0
1
2
N
405
Sub_id FILTER CONTROL PORTION
404
PID FILTER
a0
403
FILTER CONTROL PORTION
402
INPUT PORTION
401

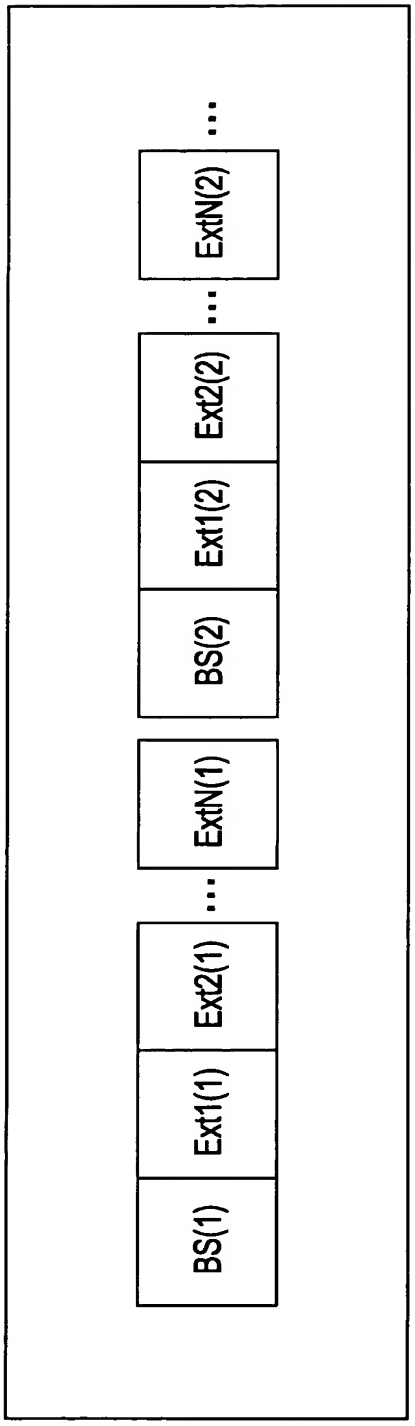


FIG. 29

FIG. 30

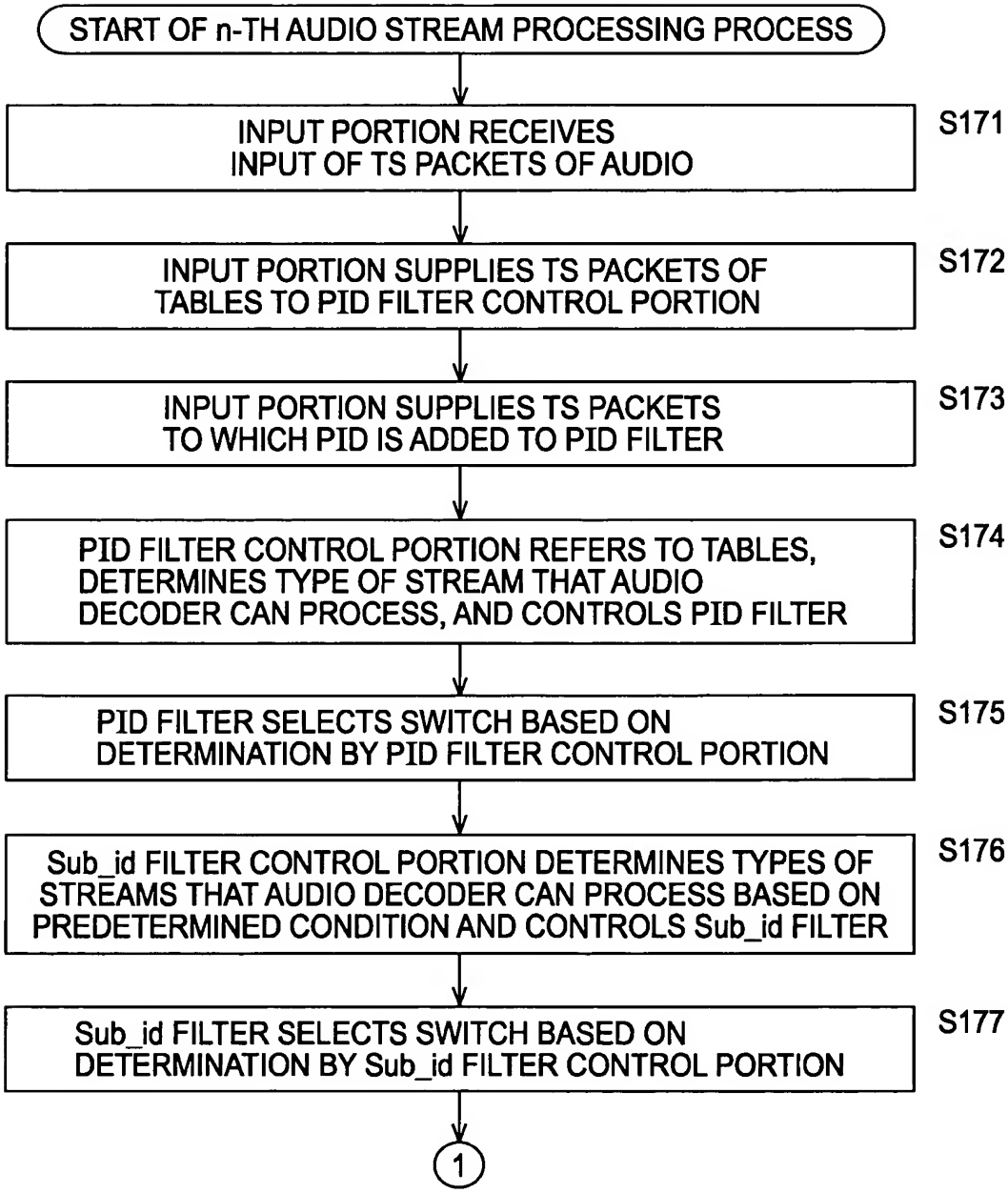

START OF n-TH AUDIO STREAM PROCESSING PROCESS
INPUT PORTION RECEIVES INPUT OF TS PACKETS OF AUDIO
S171
INPUT PORTION SUPPLIES TS PACKETS OF TABLES TO PID FILTER CONTROL PORTION
S172
INPUT PORTION SUPPLIES TS PACKETS TO WHICH PID IS ADDED TO PID FILTER
S173
PID FILTER CONTROL PORTION REFERS TO TABLES, DETERMINES TYPE OF STREAM THAT AUDIO DECODER CAN PROCESS, AND CONTROLS PID FILTER
S174
PID FILTER SELECTS SWITCH BASED ON DETERMINATION BY PID FILTER CONTROL PORTION
S175
Sub_id FILTER CONTROL PORTION DETERMINES TYPES OF STREAMS THAT AUDIO DECODER CAN PROCESS BASED ON PREDETERMINED CONDITION AND CONTROLS Sub_id FILTER
S176
Sub_id FILTER SELECTS SWITCH BASED ON DETERMINATION BY Sub_id FILTER CONTROL PORTION
S177
1

FIG. 31

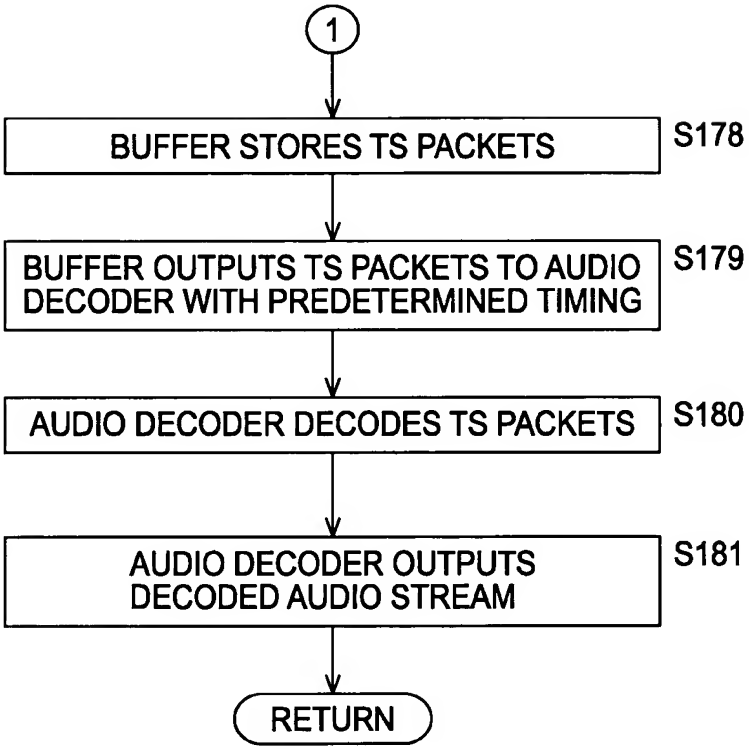

1
BUFFER STORES TS PACKETS
S178
BUFFER OUTPUTS TS PACKETS TO AUDIO DECODER WITH PREDETERMINED TIMING
S179
AUDIO DECODER DECODES TS PACKETS
S180
AUDIO DECODER OUTPUTS DECODED AUDIO STREAM
S181
RETURN

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FIG. 32

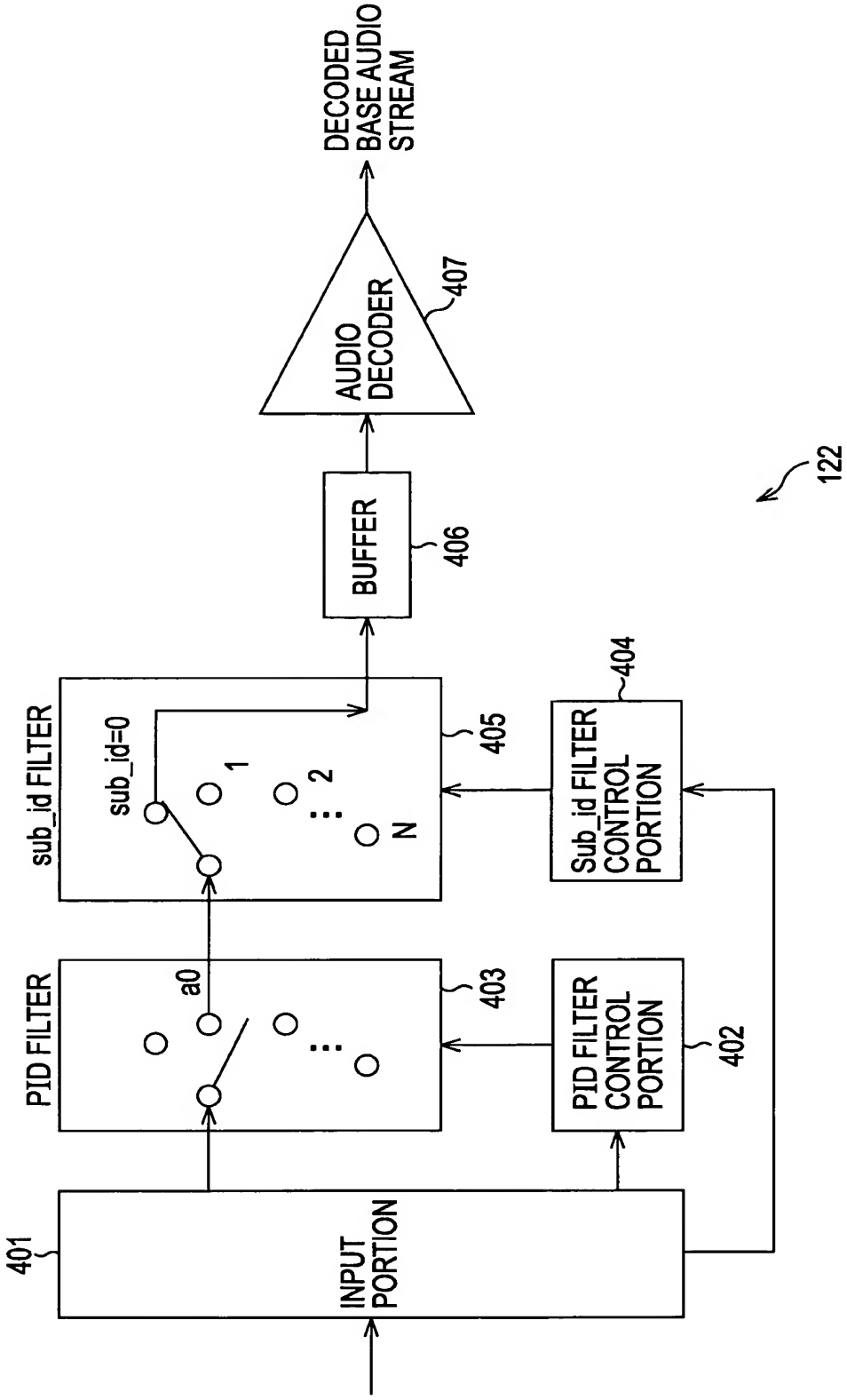
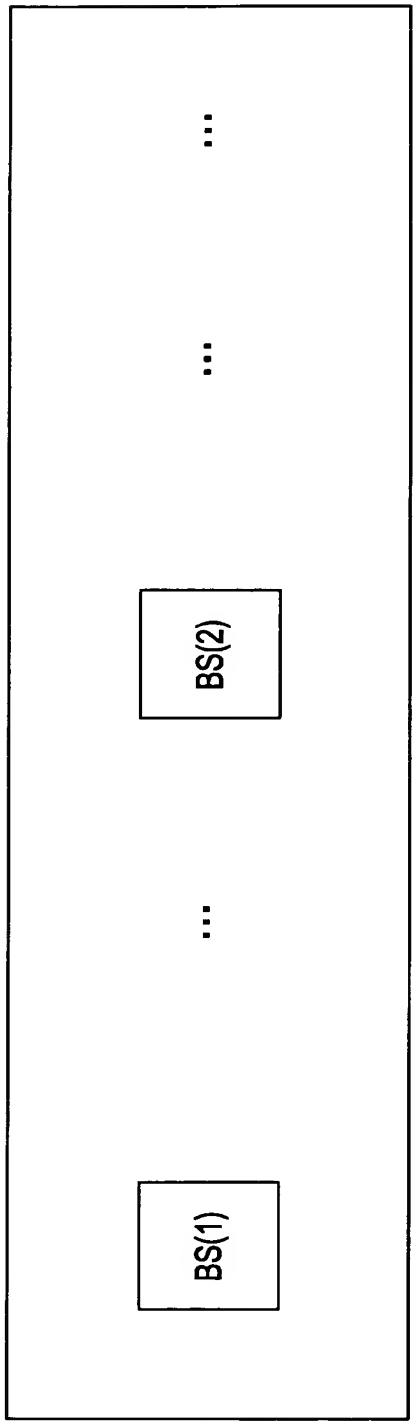


FIG. 33



S05P0145

FIG. 34

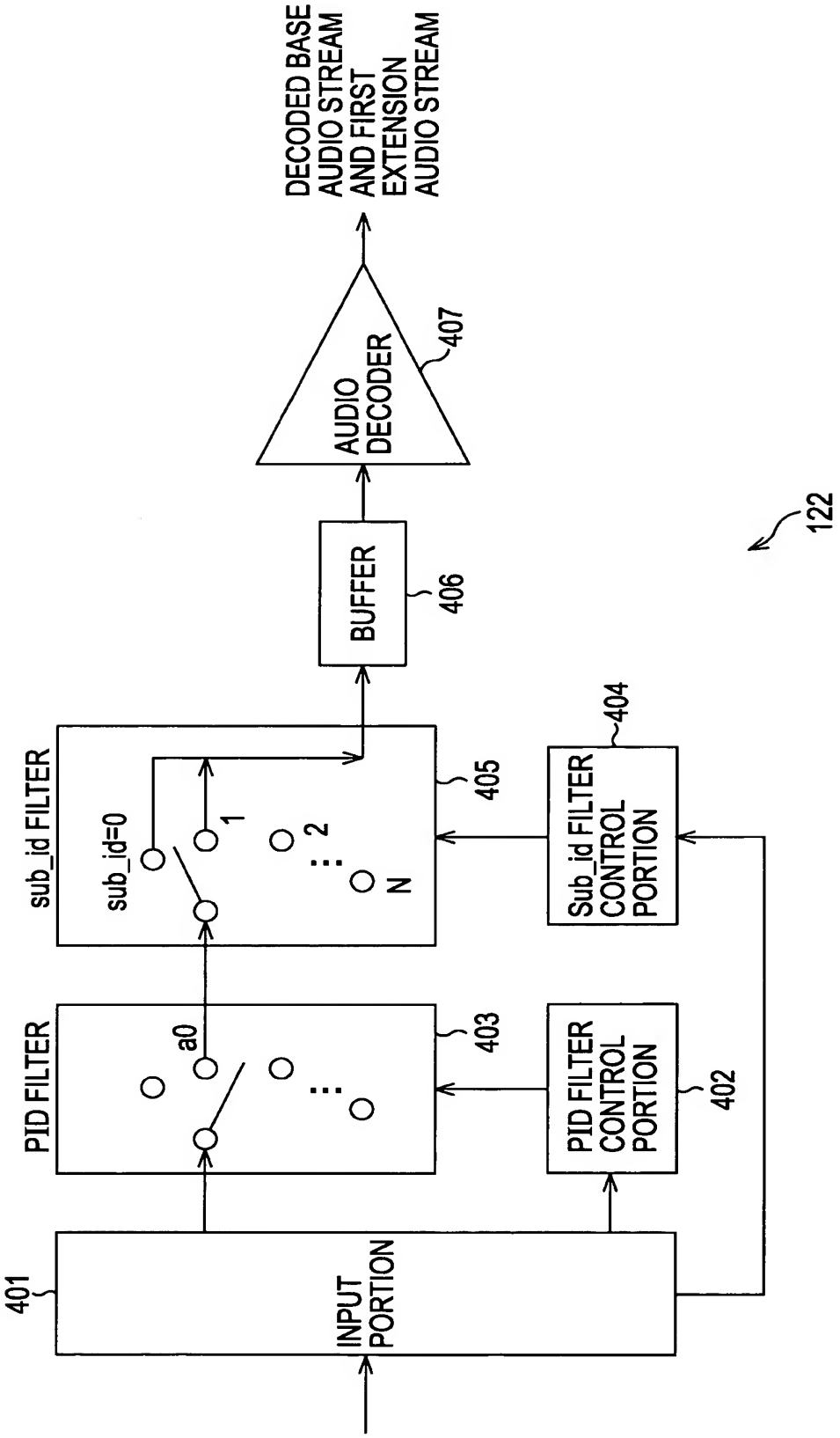


FIG. 35

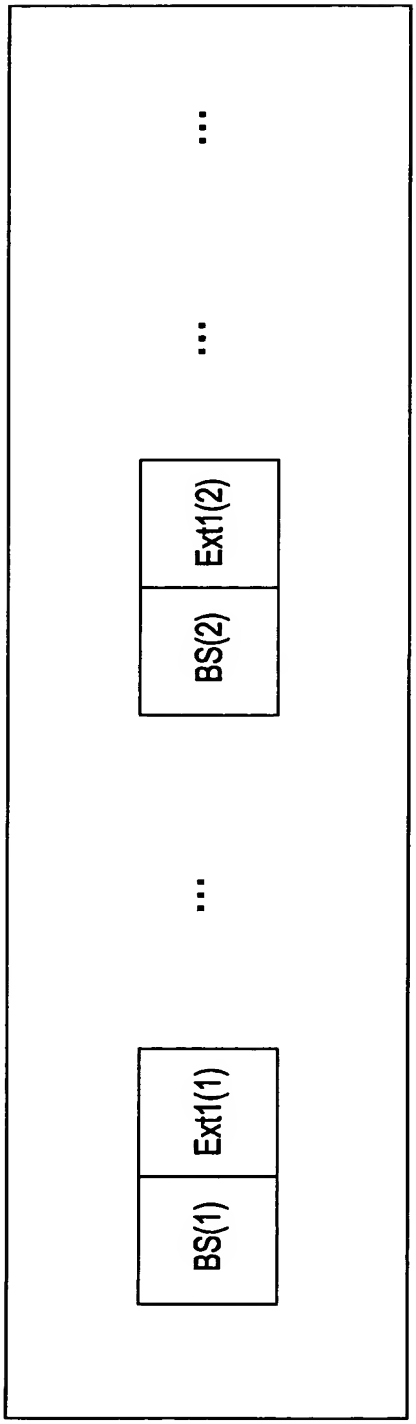
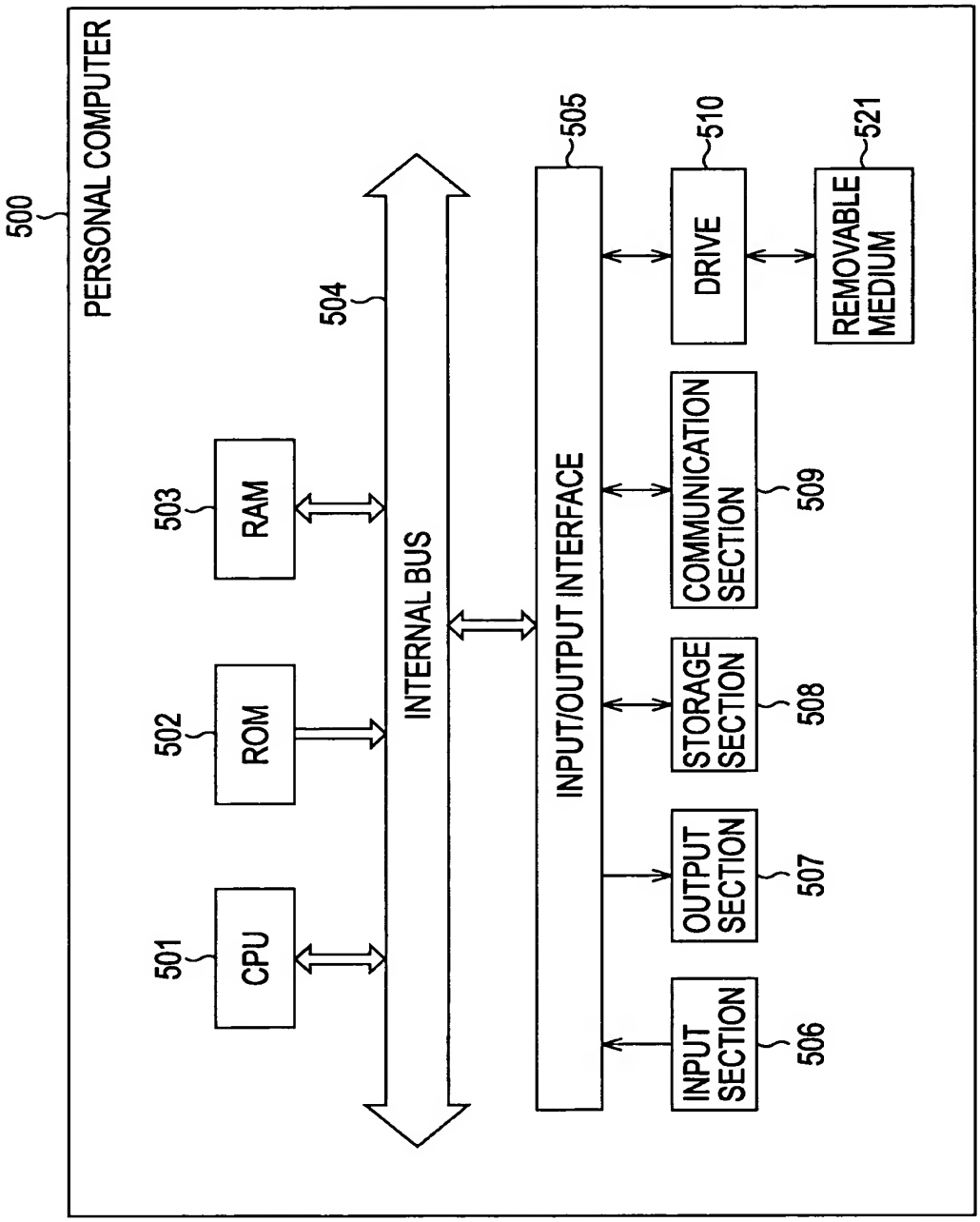


FIG. 36


500
PERSONAL COMPUTER
501
CPU
502
ROM
503
RAM
504
INTERNAL BUS
505
INPUT/OUTPUT INTERFACE
506
INPUT SECTION
507
OUTPUT SECTION
508
STORAGE SECTION
509
COMMUNICATION SECTION
510
DRIVE
521
REMOVABLE MEDIUM

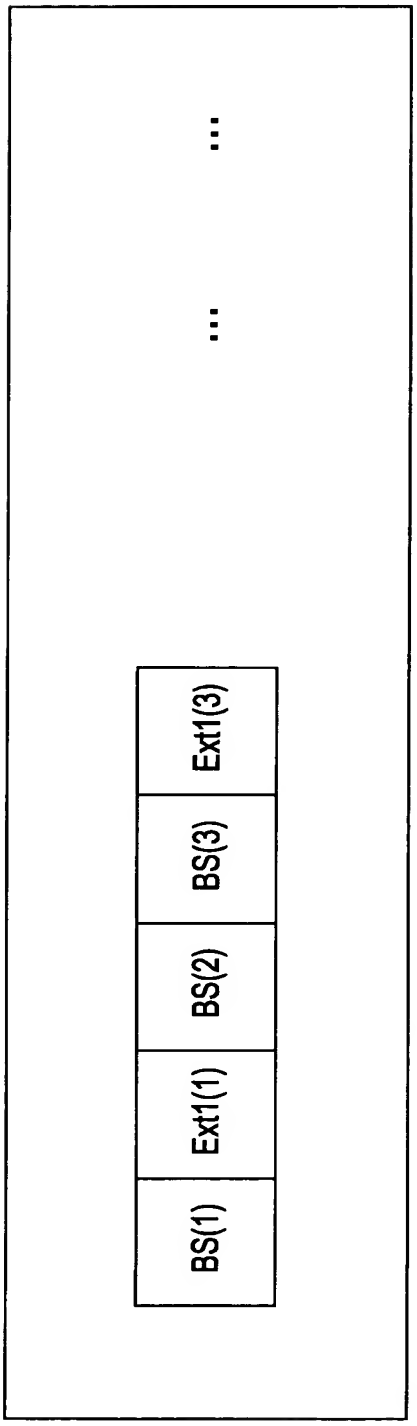



FIG. 37